SAFIR 4th Core Training Course on
Infrastructure Regulation and Reform
15-23 September 2002
Goa, India

Sunday • 15 September 2002

9:00-10:20 a.m. *Penelope Brook* South Asia Sector Manager for Energy, The World Bank, USA	**Plenary session 1 Regulation and reform in the infrastructure sectors** The session will provide an overview of broad trends in introducing regulation and reforms in infrastructure sectors, trends in private investment throughout the world, and an assessment of the unfinished agenda facing infrastructure regulators.
10:40 a.m.-12:00 noon *Ashley Brown* Executive Director Harvard Electricity Policy Group, Cambridge, USA	**Plenary session 2 Introducing competition in infrastructure sectors** The session will analyse special features of network industries and how these features present challenges for introducing competition It will then examine selected examples to illustrate the extent to which competition has been introduced as well as the impact that this has had on prices, quality of service, and expansion of the network in South Asia
12:00-1:20 p.m. *Ashley Brown* Executive Director Harvard Electricity Policy Group, Cambridge, USA	**Plenary session 3 Infrastructure market design** The session will look at techniques for the allocation of scarce resources (e.g the radio spectrum) or exclusive licences It will cover the main concepts and illustrate these with case studies.
2:10-3:30 p.m. *P Neogi* Chief Executive Officer Noida Power Company Limited India	**Plenary session 4 Regulation of a private power utility - metamorphosis of an organization** The session will give an account of the organizational transformation necessary, in regulated companies operating in the infrastructure sectors to cope with the challenges of a regulatory environment . The discussions will give participants a chance to gain various perspectives on regulation and regulators
3:50-5:45 p.m.	**Group discussion** Key issues in infrastructure reforms and regulation in South Asia Discussion led by *S K Sarkar*, Senior Fellow, TERI, India

Monday • 16 September 2002

9:00-10:20 a.m. *Martin Rodriguez Pardina* Former Executive Director, Economic Regulation Research Center, Argentina	**Plenary session 5 Economic analysis of access prices and conditions** A key function of regulators in ensuring competition is to effectively regulate access to, and prices charged for, bottleneck facilities This session will review the conceptual issues involved.
10:40 a.m.-12:00 noon *S K Jena* Director (Tariff), Orissa Electricity Regulatory Commission, India	**Plenary session 6 How to run a price review** The session will cover the main activities involved in undertaking a price review, including both technical and economic aspects, interaction with regulated companies, consumers, and the government, managing the media, and anticipating reactions to the results of the price review, including appeal This session will identify some of the main principles involved, which will be used as a foundation when the case studies are examined
12:00-1:20 p.m. *Ian Alexander* South Asia Energy and Infrastructure Unit, The World Bank	**Plenary session 7 Price regulation - price caps and incentives** The session will provide the rationale for price/revenue cap approaches, and their use and evolution within the UK.
2:00-3:30 p.m. *Sanjeev S Ahluwalia* Joint Secretary, Government of India	**Plenary session 8 Other techniques for price regulation** The session will review alternative methods of setting prices covering rate of return, sliding scale, hybrid approaches, and other techniques, which relate prices to measures of performance The session will also present applied examples of multi-year price controls and related issues.
3:50-5:50 p.m. *Ian Alexander*, South Asia Energy and Infrastructure Unit, The World Bank, *Gaurav Bhatiani*, Fellow, TERI, and *D Joshi*, Senior Economist, CRISIL	**Plenary session 9 Introduction to the price control review case study** This session will introduce the case study to the participants and explain what the main goals are and how it will function The case study will provide participants an opportunity to work in groups over a period of one week on a realistic case study of setting price controls. The case study will incorporate the various concepts covered in the course and culminate in the presentation to a panel of sitting or ex-regulators from the region

9:00-10:20 a.m *Martin Rodriguez Pardina* Former Executive Director, Economic Regulation Research Center, Argentina	**Plenary session 10 Measuring efficiency and performance** The session will provide an overview of how regulators can use efficiency measures as well as review some of the techniques used for calculating efficiency and the special problems likely to be encountered in the South Asia region
10:40 a.m.-12:00 noon *Ian Alexander* South Asia Energy and Infrastructure Unit, The World Bank	**Plenary session 11 Financial techniques - accounting approaches and asset valuation** The session will look at key building blocks in the financial analysis underpinning price regulation It will cover the treatment of depreciation and other key accounting issues, and will also look at different techniques employed for asset evaluation
12:00-1:20 p.m *Srikant Kulkarni* Head (Energy), CRISIL, India	**Plenary session 12 Cost of capital - theory and concepts** The session will review the main theoretical approaches to establishing the cost of capital, and the application of these to selected examples in the infrastructure sectors
2:10-3:30 p.m. *Srikant Kulkarni* Head (Energy), CRISIL, India	**Plenary session 13 Cost of capital -regional approaches** Based upon the work recently done for the Central Electricity Regulatory Commission in India, this session will look at the difficulties in implementing techniques for the measurement of cost of capital in India, and the judgments and approaches that regulatory agencies have to adopt in these situations
3:50-5:20 p.m.	**Price control case study**

Wednesday • 18 September 2002

9:00-10:20 a.m *Penelope Brook* South Asia Sector Manager for Energy, The World Bank, USA	**Plenary session 14 USO (universal service obligation) and incentives for service expansion** The session will cover some of the main conceptual and practical issues involved in addressing incentives for system expansion and meeting USO within network industries This is complemented with a case study of the programme to encourage electrification in Latin American countries
10:40 a.m.-12:00 noon *Clive Harris* Senior Private Sector Development Specialist, The World Bank	**Plenary session 15 Regulation and reform - small scale providers** The session will review the extent to which infrastructure services are provided by small-scale service providers, their relationships with various stakeholders, and the complexity of regulation of these service providers
12:00-1:20 p.m. *S L Rao* Distinguished Fellow, TERI and Former Chairman, Central Electricity Regulatory Commission, India	**Plenary session 16 Regulating state-owned enterprises in infrastructure** The theory and much of the international practice of economic regulation have largely been designed for situations where the regulator is overseeing private companies In South Asia, regulators may find themselves in the position of regulating public sector companies and overseeing their interaction with new private entrants This session draws upon experiences from the power and telecom sectors in looking at the special challenges this poses for regulators
2:10-3:30 p.m.	**Sectoral breakout 1 Decentralized and small-scale service providers**
POWER	Village electrification with solar photovoltaic power plants and mini-grid in remote and inaccessible areas – a case study in an island *S P Gon Chaudhury*, Director, WBREDA (West Bengal Renewable Energy Development Agency), Kolkata, India
TELECOM	Grameenphone's experience in delivering service to the poor *Y M Al Yahya*, Director, Grameenphone, Bangladesh
WATER	Urban water and sanitation sector reforms: options for Indian small towns *Vivek Srivastava*, Team Leader, India Country Team, Water and Sanitation Programme, The World Bank, New Delhi
PORTS	Reform in the port sector: experience of Australia *Ian Alexander*, South Asia Energy and Infrastructure Unit, The World Bank
3:50-5:20 p.m.	*Group work on price control case study*

Thursday • 19 September 2002 (Off)

Power	Organization of wholesale electricity markets *Martin Rodriguez Pardina*, Former Executive Director, Economic Regulation Research Center, Argentina
Telecom	Developments in US price regulation *Rohan Samarajiva*, Team Leader, Public Interest Programme Unit, Ministry of Economic Reforms, Government of Sri Lanka
Water	Restructuring, regulation, price setting and serving the urban poor the case of the Manila Water Company under the MWSS (Manila Water Supply and Sewerage) Privatization *Perry V Rivera*, Group Director, Regulatory Affairs and Planning Manila Water Company, The Philippines
Gas	Cross-country experience regulation and restructuring of oil and gas industry *Martin Plackett*, Head, Regulation, BG Group, UK
Transport (Bus)	Criterion for reform and regulation of Bus transport *Amal Kumarage*, Head, Transportation Engineering Division, Department of Civil Engineering, University of Moratuwa, Moratuwa, Sri Lanka
10:40 a.m.-12:00 noon	**Sectoral breakout 3 Regulation and restructuring: regional experience**
Power	A case study on electricity regulation and restructuring in Andhra Pradesh, India *G P Rao*, Chairman, Andhra Pradesh Electricity Regulatory Commission, India
Telecom	Regulation and restructuring (telecom) regional case study Bangladesh *Abu Saeed Khan*, Telecom Analyst, Bangladesh
Water	Restructuring the water sector. India's experience with private sector participation *S K Sarkar*, Senior Fellow, TERI, India
Oil and Gas	Regulatory system for the Indian oil industry. a case study *Devi Dayal*, Former Secretary, Government of India
Ports	Ports restructuring in India *S Sundar*, Distinguished Fellow, TERI, India
12:00-1:20 p.m.	**Sectoral breakout 4 Competition: international experience**
Power	Guatemala privatization and rural electrification *Clive Harris*, Senior Private Sector Development Specialist, The World Bank
Telecom	Universal-access policy and regulation Lessons from Chile *Rohan Samarajiva*, Team Leader, Public Interest Programme Unit, Ministry of Economic Reforms, Government of Sri Lanka
Water	Restructuring, regulation, price setting and serving the urban poor the case of the Manila Water Company under the MWSS privatization *Perry V Rivera*, Group Director, Regulatory Affairs and Planning, Manila Water Company, The Philippines
Gas	Restructuring for competition in gas markets *Martin Rodriguez Pardina*, Former Executive Director, Economic Regulation Research Center, Argentina
Transport (Railways)	Railway restructuring and regulation worldwide lessons *Ian Alexander*, South Asia Energy and Infrastructure Unit, The World Bank
2:10-3:30 p.m.	**Sectoral breakout 5 Competition: regional experience**
Power	Delhi restructuring and privatization experience *Jagdish Sagar*, Chairman and Managing Director, Delhi Power Supply Co Ltd, India
Telecom	Regulation and restructuring (telecom) regional case study Bangladesh (Contd) *Abu Saeed Khan*, Telecom Analyst, Bangladesh
Water	Proposed management lease contract for the Kathmandu valley urban water supply and sewerage *Rattan Kumar Siddhi*, Coordinator, Private Sector Participation Committee, Nepal
Oil and Gas	Oil and gas industry in Bangladesh a case study *Nooruddin M Kamal*, Former Additional Secretary, Government of Bangladesh and Former Chairman, Power Development Board, Bangladesh
Transport (Bus)	Restructuring of the Delhi Transport Corporation *O P Agarwal*, Joint Secretary, Government of India
3:50-5:20 p.m.	**Sectoral breakout 6 Pricing: international experience**
Power	Setting distribution tariffs *Martin Rodriguez Pardina*, Former Executive Director, Economic Regulation Research Center, Argentina
Telecom	Regulatory approaches to pricing *Rajat Kathuria*, Telecom Consultant, India
Water	Restructuring, regulation, price setting and serving the urban poor the case of Manila Water Company under the MWSS privatization *Perry V Rivera*, Group Director, Regulatory Affairs and Planning, Manila Water Company, The Philippines
Gas	Gas pricing strategies *A Sen*, Senior Fellow, TERI, India
Transport (Railways)	Railway restructuring and regulation lessons from the UK *Ian Alexander*, South Asia Energy and Infrastructure Unit, The World Bank

	Sectoral breakout 7 Pricing: regional experience
Power	Evolution in electric power tariffs *Gaurav Bhatiani*, Fellow, TERI, India
Telecom	Regulatory approaches to pricing India case study *Rajat Kathuria*, Telecom Consultant, India
Water	India urban water sector Financing institutional reforms *S Banerjee*, Visiting Fellow, National Institute of Urban Affairs, India
Oil and Gas	Gas pricing strategies (Contd) *A Sen*, Senior Fellow, TERI
Transport (Bus)	UK bus transport *O P Agarwal*, Joint Secretary, Government of India
10:40 a.m.-12:00 noon	**Plenary session 17 Non-price approaches to setting prices: quality of service and environment**
Clive Harris Senior Private Sector Development Specialist, The World Bank	The session will review concerns about how performance standards and environmental issues can be addressed alongside price regulation Selected international examples will be presented.
12:00-1:20 p.m.	**Plenary session 18 Regional approaches to quality of service**
S K Sarkar Senior Fellow, TERI, India	The session will review experiences on performance standards alongside price regulation being addressed in the South Asian region Selected regional examples will be presented.
2:10-3:30 p.m.	**Plenary session 19 Regulatory risk and regulatory commitment**
Clive Harris Senior Private Sector Development Specialist, The World Bank	The session will examine investors' perceptions of regulatory risk, how these may vary between countries, and how regulatory discretion can and has been reduced. Besides, other issues faced by regulators in the region in the context will also be discussed
3:50-5:20 p.m.	**Plenary session 20 Legal and judicial processes in regulation in South Asia**
S Sundar Distinguished Fellow, TERI, India	The session will examine the existing appeal mechanisms embodied in legislation establishing regulatory bodies in South Asia, as well as the experience so far regarding judicial review of regulatory decisions
5:20-6:20 p.m.	**Group work for price control case study**

Sunday • 22 September 2002

9:00-10:20 a.m.	**Plenary session 21 Issues around private investments in power sector: experience from India**
R K Pachauri Director-General, TERI, India	The session will provide an insight into issues related to private sector participation in the power sector in India
10:40 a.m.-12:00 noon	**Plenary session 22 Institutional design in South Asia**
Leena Srivastava Director, Regulatory Studies and Governance Division, TERI, India	The session will provide an overview of the independence and functions of regulatory bodies in South Asia, as well as assess how this impacts their effectiveness
12:00-1:20 p.m.	**Plenary session 23 Establishing regulatory legitimacy**
Rohan Samarajiva Team Leader, Public Interest Programme Unit, Ministry of Economic Reforms, Government of Sri Lanka	Based on the experience of heading a regulatory agency in Sri Lanka, the session will look at the challenges that the new regulatory agencies face to their regulatory legitimacy, and the tactics they adopt to overcome these challenges
2:10-3:30 p.m.	**Plenary session 24 Stakeholder consultation – regional regulatory processes**
Kolitha Ranawaka Telecommunications Regulatory Commission, Sri Lanka	The session will review the different methodologies adopted in the region for the stakeholder consultation process and their effectiveness Selected examples will be presented from the South Asia region.
3:50-5:20	**Price control case-study review session**

Monday • 23 September 2002

9:00-10:20 a.m.	**Price control review: regulatory hearing**
10:20-10:40 a.m.	**Morning coffee**
10:40 p.m.-12:00 noon	**Price control review: regulatory hearing and course roundup**
12:00 noon	**Lunch**

Ashley C. Brown
Executive Director
Harvard Electricity Policy Group
Centre for Business and Government
Kennedy School of Government, Harvard University
79 John F. Kennedy Street
Cambridge, MA 02138
Tel 617-495-0959
Fax 617-495-1635
Email ashley_brown@harvard.edu

Ashley Brown is an attorney admitted to practice in Ohio, Massachusetts, and the District of Columbia. He is the Executive Director of the Harvard Electricity Policy Group at Harvard University's John F. Kennedy School of Government. It is a leading "think tank" on matters related to electricity restructuring, regulation, and market formation. He is an instructor in Harvard's Executive program on "Infrastructure in a Market Economy." He is Of Counsel to the law firm of LeBoeuf, Lamb, Greene and MacRae, 260 Franklin St., Boston, MA, 02110. Ashley Brown has also served as an arbitrator in matters relating to the evolution of competition in infrastructure industries.

Before his current activities, Ashley Brown served as Commissioner of the Public Utilities Commission of Ohio, appointed twice by Governor Richard F. Celeste, first for a term from April 1983 to April 1988 and for a second term from April 1988 to April 1993.

Prior to his appointment to the Commission, Ashley Brown was Coordinator and Counsel of the Montgomery County, Ohio, Fair Housing Center. From 1979-1981 he was Managing Attorney for the Legal Aid Society of Dayton, Inc. From 1977 to 1979 he was Legal Advisor of the Miami Valley Regional Planning Commission in Dayton. While practicing law, he specialized in litigation in federal and state courts, as well as before administrative bodies. In addition, Mr. Brown has extensive teaching experience in public schools and universities.

He holds Bachelor of Science degree from Bowling Green State University, Master of Arts degree from University of Cincinnati, J.D. degree from University of Dayton School of Law, and Doctoral Studies (all but dissertation) New York University.

He is affiliated with various organizations including Board of Directors, Oglethorpe Power Corporation, Tucker, GA; Member, Editorial Advisory Board of The Electricity Journal; Member, Editorial Advisory Board of Electric Light and Power. He is a frequent speaker and lecturer on regulatory matters in North and South America, Europe, Africa and Asia. Previously, Ashley Brown was affiliated with Vice-Chair, American Bar Association Committee on Energy; Chair, American Bar Association Annual Conference on Electricity Law; Member, The Keystone Center Energy Advisory Committee; Member, National Association of Regulatory Utility Commissioners; and many more.

Ashley Brown was member of different US and international delegation. To name a few, Member, U.S. delegation of state government officials in the center for Clean Air Policy/ German Marshall Fund Sponsored Exchange on Clean Air Issues to Germany, 1989; Member, U.S. Delegation to International Electric Research Exchange (IERE), Rio de Janeiro, Brazil, 1991; Consultant, Hungarian Ministry of Industry and Trade on Gas and Electric Regulatory policy, 1991-1992; Member, U.S. Delegation, in Conjunction with the U.S. Department of Energy, to the Argentina and United States Natural Gas and Electricity Regulatory Meetings, 1992; Consultant, USAID India Private Power Initiative Program on the Introduction of Private Generation and Competition into the Public Sector, 1993; Consultant, USAID, Philippines Electric Sector Restructuring, 1994; Consultant, USAID, Russian Electric Sector Restructuring, 1994; Consultant, Government of Ukraine on Electricity regulatory policy and industry restructuring, 1994-1995; and many more. Ashley Brown has also authored several papers in different international journals.

Introducing Competition in Infrastructure Sectors

South Asia Forum for Infrastructure Regulation
Goa, India
September 15, 2002

Presentation of Ashley Brown

Executive Director, Harvard Electricity Policy Group
John F Kennedy School of Government
Harvard University

Of Counsel, LeBoeuf, Lamb, Greene and MacRae

Goals of Sector Reform

- Enhance Sector Efficiency
- Improve Service Quality
- Reduce Political Interference
- Reduce Opportunities for Corruption
- Put Sector on a Commercial Basis
- Enhance Ability to Attract Capital on Favorable Terms

Goals of Sector Reform

(contd)

- Conform to International Pressure for Liberalization
- Reduce Government Debt and Fiscal Deficit
- Reallocation of Resources of the State
- End Under-Capitalization of Sector
- Ideology
- Reduce Influence of Labor Unions
- Privatization of Risk
- Technological Innovation
- Change in Economies of Scale and Scope

Timing of Decisions

- What Happens First?
  - Privatization?
  - Design of Market Structure?
  - Enactment and Implementation of Regulatory Regime?
  - Simultaneous Implementation?
  - Compare and contrast Brazil and Argentina

Privatization Models

- Allow Private Investments in State-owned Enterprises (e.g. CEMIG, COPEL)
- Allow New Entrants to be Private but leave Existing Assets in State-owned (e.g. India, Indonesia)
- Privatize some Assets (e.g. Zambia)
- Privatize all Assets (e.g. Argentina, Chile)

Post-Privatization Risk/Reward Symmetry

- Socialization or Privatization of Risk
  - Investor Fantasy: Socialize Risk – Privatize Gain
  - Consumer Fantasy: Privatize Risk – Socialize Gain
- Heightened Perception of Risk Raises Cost of Capital

Post-Privatization Risk/Reward Symmetry (contd)

- Who Bears Following Risks?
  - Uncontrollable Risks (e.g. Currency Fluctuation. Natural Disasters. Economic Cycles)
  - Partially Controllable Risks (e g Taxes. Environmental/Safety Rules. Fuel Prices. New Obligations or Rules)
  - Controllable Risks (e g. Operations. Construction. Technology)

Post-Privatization Risk/Reward Symmetry (contd)

- Dance of the Virgins: Favorable Treatment of Early Investors; Subsequent Efforts to Adjust (e.g. Australia, Argentina Gas, Rio Light)
- Reaction of World Capital Markets

Goals and Realities

Goal	Post-Reform Reality
Improved Efficiency	Perhaps
Improved Service Quality	Perhaps
Reduced Political Interference	Creation of Powerful, New Interest Groups
Reduce Corruption	Different Opportunities created

Goals and Realities

(contd)

Goal	Post-Reform Reality
Commercialization of Sector	Perhaps
Ability to attract Capital	At what Cost?
Reduce International Pressures	Pressure may actually increase
Reduce Government Debt	Opportunity only

Goals and Realities (contd)

Goal	Post-Reform Reality
Reallocate Public Resources	Opportunity Only
Fully Capitalized Sector	Perhaps
Ideological Goal	Achieved
Reduce Influence of Labor	Perhaps, but at what Cost?

Goals and Realities(contd)

Goal	Post-Reform Reality
Privatization of Risk	Not Necessarily
Technological Innovation	Perhaps (e g Rio Light)
Economies of Scale and Scope	New Risks (e g self-dealing)

Potentially Destabilizing Tensions in Implementing Sector Reform

- Maximization of Revenues vs Optimizing Post-reform Market (e g COELBA)
- Economic Efficiency vs Social Objectives/Expectations (e g cross subsidies)
- Privatized Risks/Rewards vs Socialized Risk/ Rewards (i e search for symmetry)
- Reliance on Market Forces vs Reliance on Regulation

Potentially Destabilizing Tensions in Implementing Sector Reform

(contd)

- Regulatory Independence vs. Regulatory Accountability
- Factors Internalized in Tariffs vs. Factors External to Tariffs
- Certainty for Investors vs. Flexibility to Adjust to Altered Circumstances

Incentives: Pros and Cons

Incentive for Investor	Destabilizing Effect
Sovereign Guarantee	Invitation for Government Interference
International Arbitration for Dispute Resolution	Demonstrates Distrust of Local Institutions
Dispute Resolution in Accordance with Law of Foreign Jurisdiction	Demonstrates Low Regard for Local Mores and Laws
Price Cap without Productivity Factor	Emphasizes Cost Savings (e g Layoffs not Gains in Productivity)

Incentives: Pros and Cons
(contd)

Incentive for Investor	Destabilizing Effect
Tariff Adjustments for Currency Fluctuations	Increases Distance of Investors from Local Economy and Customers
Take or Pay Contracts	Social Risk at Most Vulnerable
Highly Favorable Terms for Initial Investors	Creates Unreal Expectations/ Benchmark

Attainment of Goals

- Highly Dependent on Institutional/Market Arrangements and Human Resources
  - Nation's Leverage in World Capital Markets
  - Compatibility of Imported Models with Local Circumstances (e g Ukraine)
  - Difficulty of getting Sequence of Reforms correct (e g Dhobal, Rio Light)
  - Development of new Skills for new Role in State Sector

Attainment of Goals (contd)

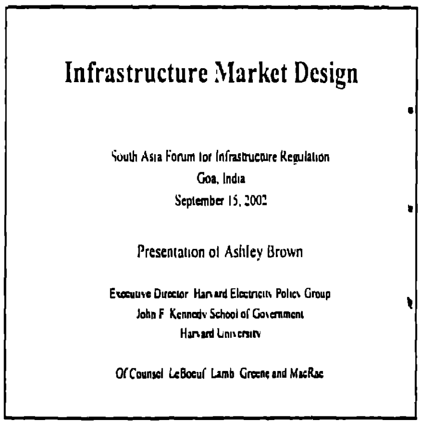
- Highly Dependent on Institutional/Market Arrangements and Human Resources.
  - Nature of Legal System (e g Independent Judiciary, Property Rights, Commercial Code)
  - Viability of Independent Regulation (e g budget, Politics, Enforcement of Decisions)
  - Political Environment (e g Organized Interests, Public Tolerance of Higher Prices)
  - Performance of New Entrants
  - Market Power and Anti-Trust Enforcement

Fundamental Policy Choices in Regulation

- Economic Efficiency vs Social Considerations
- Rule-Based vs Contract (Concession) Based
- Rate of Return (Cost based) vs Price Cap Regulation of Monopoly Services
- Anti-Trust vs Proactively Competitive Approaches to Market Formation
- Deliberative vs Administrative Decision
- Centralization vs Decentralization

Anti-Trust (Competition) Policy Options

- Market Power: Defining and Identifying
- Proactive vs. Reactive
- Structural vs. Behavioral Remedies
- Who enforces?



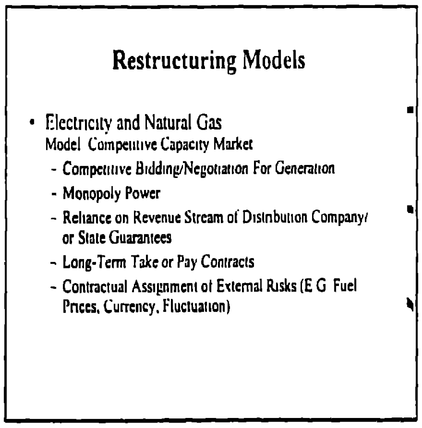
Infrastructure Market Design

South Asia Forum for Infrastructure Regulation
Goa, India
September 15, 2002

Presentation of Ashley Brown

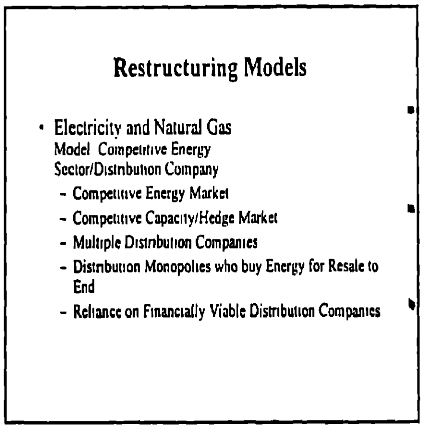
Executive Director Harvard Electricity Policy Group
John F Kennedy School of Government
Harvard University

Of Counsel LeBoeuf Lamb Greene and MacRae



Restructuring Models

- Electricity and Natural Gas
  Model Competitive Capacity Market
  - Competitive Bidding/Negotiation For Generation
  - Monopoly Power
  - Reliance on Revenue Stream of Distribution Company/ or State Guarantees
  - Long-Term Take or Pay Contracts
  - Contractual Assignment of External Risks (E G Fuel Prices, Currency, Fluctuation)



Restructuring Models

- Electricity and Natural Gas
  Model Competitive Energy Sector/Distribution Company
  - Competitive Energy Market
  - Competitive Capacity/Hedge Market
  - Multiple Distribution Companies
  - Distribution Monopolies who buy Energy for Resale to End
  - Reliance on Financially Viable Distribution Companies

Restructuring Models

- Electricity and Natural Gas
  Model Competitive Energy
  Sector/Open Retail Market
  - Competitive Energy Market
  - Competitive Capacity/Hedge Market
  - Distribution Function Limited to Wires/Degree of Unbundling
  - End Users Free to Pick Own Suppliers

Restructuring Models

- Telecommunications
  Model Monopoly
  - All Services Rendered by Single Provider
  - No Competition Allowed

Restructuring Models

- Telecommunications
  Model. Monopoly Local Loop,
  Competitive Other Services
  - Competition in Long Distance
  - Competition in Wireless
  - Other Competitive Services

Restructuring Models

- Telecommunications
  Model Full Competition
  - Competition in Local Loop
  - Full Access to All Facilities
  - Easy Entry/Easy Exit

Privatization Models

- State Assets Retained/Incremental Capacity open to Private Investment
- Sale of Majority/Minority Status in State Company
- Privatization of all Competitive Assets/Essential Bottleneck Facilities Retained by State
- Everything Privatized/Assuming it can be Privatized

Tensions In Privatization

- Maximize Revenues from Sale of Assets vs. Market Optimization
- Maintaining Social Objectives in Market Environment
- Incentives for Productivity Gains vs mere Cost Cutting
- Leverage of Developing Countries in World Capital Markets

Prabir Neogi
Chief Executive
Noida Power Company Limited
E-mail: PrabirNeogi@noidapower.com

Prabir Neogi is an engineering graduate and holds a professional diploma in finance and accounting management.

Prabir has had 16 years of experience in power distribution between 1974 and 1990, having worked with CESC Limited, which supplies power to the city of Calcutta. He has thereafter been associated with Cable Corporation of India, Bombay, in marketing and installation of high voltage cable systems required for bulk power transmission projects. Since October 1995, Prabir is the Chief Executive, Noida Power Company Limited, which has taken up electricity distribution in Greater Noida area as a private licensee. In a span of 8 years, the Company has achieved financial turnaround, reduced distribution losses and maximized revenue collection.

As the Chief Executive, Prabir is responsible for profit centre management, corporate governance, strategy deployment, technology applications, regulatory compliances, practice documentation, organizational development and media and external relationships. One of the challenges has been to build the preparedness to meet the regulatory mandates of data collection, documentation, information disclosure and performance reporting.

Prabir is actively associated in the process of power distribution reforms in India. He is a member of the National Committee on Energy of the Confederation of Indian Industry and the Energy & Infrastructure Committee of the PHD Chamber of Commerce. He is a member of the Core Group on Best Practices under the Accelerated Power Development & Reform Program of the Ministry of Power. He is a regular speaker in professional forums and is involved in training and dissemination programs conducted by organizations like Tata Energy Research Institute, U.S. Agency for International Development, Power Management Institute, International Management Institute and Chambers of Commerce. His areas of interest include revenue and distribution management, multi-year tariff regime, performance-based regulation, rural supply reforms and energy efficiency initiatives.

Regulation of a Private Power Utility

Metamorphosis of an Organisation

Presentation at 4th SAFIR Conference at Goa

September 15, 2002 **P.Neogi**

Noida Power Co. Ltd.

Introduction

- ✓ ERC Act in 1998 introducing independent regulation at federal and State levels
- ✓ Ordinance in September 1998 constituting State Commission in U.P. having powers under the ERC Act
- ✓ U.P. Electricity Reforms Act made effective from January 2000 coinciding with Transfer Scheme and trifurcation of State Board
- ✓ Commission as licenser, licence enforcer, tariff setter, dispute resolver and guardian of consumer rights

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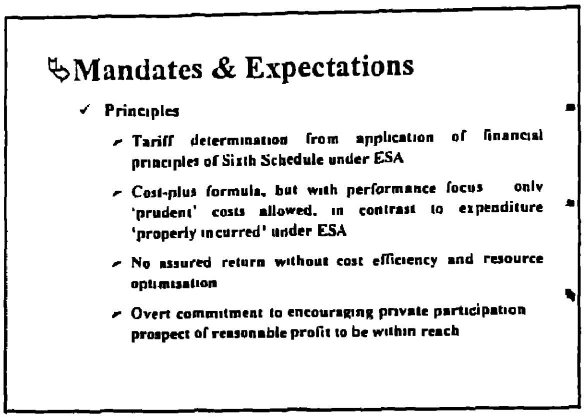
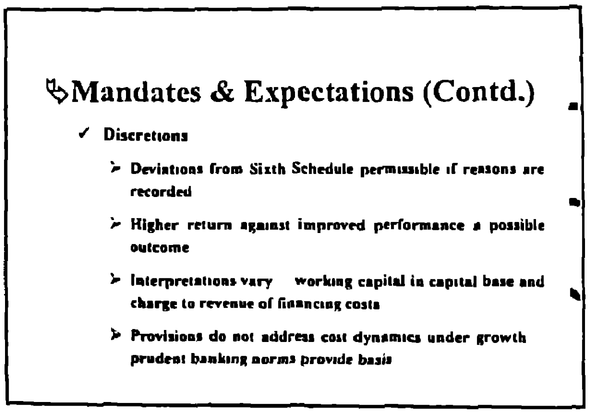
Obligation of Licensees

- ✓ New set of business rules economic / transparent governance, commercial accountability, service orientation
- ✓ Tariff decisions to follow detailed proceedings and public sharing of information
- ✓ Onus to comply with timely submission of data for decision making
- ✓ Commission having powers of Civil Court in calling for records and books of accounts



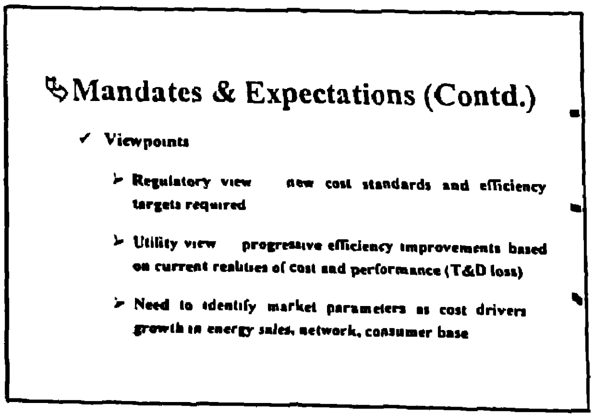
Mandates & Expectations

- ✓ Principles
  - Tariff determination from application of financial principles of Sixth Schedule under ESA
  - Cost-plus formula, but with performance focus only 'prudent' costs allowed, in contrast to expenditure 'properly incurred' under ESA
  - No assured return without cost efficiency and resource optimisation
  - Overt commitment to encouraging private participation prospect of reasonable profit to be within reach



Mandates & Expectations (Contd.)

- ✓ Discretions
  - ➢ Deviations from Sixth Schedule permissible if reasons are recorded
  - ➢ Higher return against improved performance a possible outcome
  - ➢ Interpretations vary working capital in capital base and charge to revenue of financing costs
  - ➢ Provisions do not address cost dynamics under growth prudent banking norms provide basis



Mandates & Expectations (Contd.)

- ✓ Viewpoints
  - ➢ Regulatory view new cost standards and efficiency targets required
  - ➢ Utility view progressive efficiency improvements based on current realities of cost and performance (T&D loss)
  - ➢ Need to identify market parameters as cost drivers growth in energy sales, network, consumer base

↳Mandates & Expectations (Contd.)

- ✓ Viewpoints (Contd.)
  - ➢ Treatment of uncontrollable costs undefined
    - ❑ *Legal expenses, if lumped, may be amortised over longer period*
    - ❑ Employee costs do not permit yardstick comparison or move with macro-economic indicators
    - ❑ Private licensees may have leaner workforce but market and performance-related pay

↳Change Process

- ✓ Organisational transformation to cope with the challenge of data collection, documentation, information disclosure and performance reporting
- ✓ Level playing field ensuring minimum profit if performance targets meet regulatory expectations
- ✓ Earlier approach governed by ideology, not economics claim of bulk supply rate exceeding licensee's earning from sale of electricity

↳Regulatory Economics

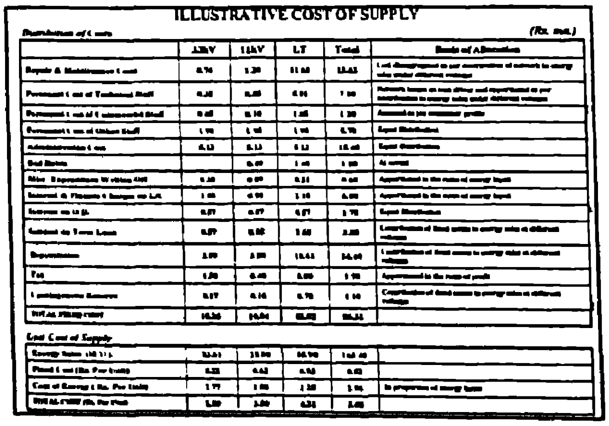
- ✓ New Relationships
  - ➢ Between bulk supplier and licensee in the determination of bulk supply rate
    - ❑ Transparent process
    - ❑ No arbitrary claims
    - ❑ Public visibility
    - ❑ Community sensitisation

Regulatory Economics (Contd.)

- ✓ New Relationships (Contd.)
  - Between licensee and consumer in the determination of retail tariffs
    - ☐ Independent decision
    - ☐ Open platform
    - ☐ Legitimate process
    - ☐ Links to service

Regulatory Economics (Contd.)

- ✓ Retail Tariffs
  - Tariff escalations pronounced for consumers paying below cost of supply, linked to inflation in cost of power for others
  - Emerging pattern of tariff changes from cost of supply at different voltage levels
  - Licensee to establish credible cost structure of allocating expenses, both fixed and variable
    - ☐ Energy sales, network size, consumer profile as cost drivers
    - ☐ Downstream cost of power varies with energy losses
    - ☐ Pricing signals from higher cost of supply at lower voltages



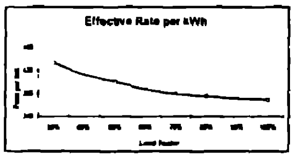
ILLUSTRATIVE COST OF SUPPLY

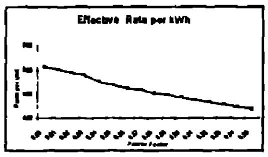
(Rs. mn.)

↳Regulatory Economics (Contd.)

✓ **Retail Tariffs (Contd.)**

- **Rationalisation of bulk industrial tariff in view lower rates against higher consumption and improvement of P.F**



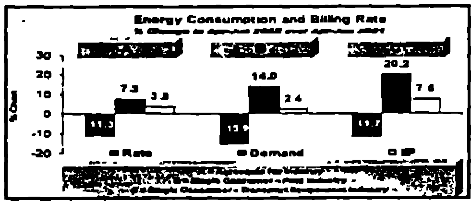


- **Improvement in average power factor from 0.91 to 0.94 'WIN-WIN' situation**

↳Regulatory Economics (Contd.)

✓ **Retail Tariffs (Contd.)**

- **Surge in demand, outperforming market indicators**



- **Turn-around strategy increasing share of industrial sales**

↳Regulatory Economics (Contd.)

✓ **Bulk Supply Rate**

- **Retail tariffs same across State licensee's revenue subject to 'price cap'**
- **Bulk supply price determined as revenue *minus* permissible expenses and allowable profit linked to earnings and also efficiency improvements**
- **Allowable costs determined as**
  - ☐ **R&M as % of GFA**
  - ☐ **P&A linked to general price rise index**
  - ☐ **Depreciation, bad debts against valid documentation**
  - ☐ **Financing cost as per prudent WC management**

Regulatory Economics (Contd.)

- ✓ Bulk Supply Rate (Contd.)
  - Approval of 'rate base' subject to
    - ☐ New investments backed by
      - cost-benefit analysis
      - productivity enhancement
      - funding arrangement
    - ☐ Baseline data
      - fixed asset records
      - on-going capex

Regulatory Economics (Contd.)

- ✓ Bulk Supply Rate (Contd.)
  - ➢ Full return of 16% on rate base subject to efficiency gains
    - ☐ Reduction in energy loss
    - ☐ Improvement in collection
    - ☐ Enhancement of performance
      - service quality
      - outage / failure rate
      - voltage profile
      - metering / billing accuracy
      - dispatch of bills
      - release of new connections

Organisational Transformation

- ✓ New Paradigm
  - ➢ Regulator as "technician, political analyst / strategist, advocate, detective, prosecutor, judge, negotiator, educator and manager"

    Smith
  - ➢ Holistic change of people, process, practices
    - ☐ Environment management
    - ☐ Managerial competence
    - ☐ Performance & service orientation
    - ☐ Fact-based management
    - ☐ Application of law & economics
    - ☐ Practice documentation

↬Metamorphosis (Contd.)

- ✓ **New Paradigm (Contd.)**
  - ➢ **Drivers for change**
    - ☐ **Threat of bankruptcy drives managerial incentives boundary conditions of financial viability under 'price cap', regulated cost, fixed energy loss**
      - **weak balance sheet limits financing options**
    - ☐ **Forward estimates of demand, cost, investment plans higher degree of automation for enhancing process capabilities**
      - **engineering, billing & financial data**

↬Metamorphosis (Contd.)

- ✓ **New Paradigm (Contd.)**
  - ➢ **Drivers for change (Contd.)**
    - ☐ **Requirement of public disclosures new mindset for sharing of information on business expenses**
      - **transparent, credible documentation**
    - ☐ **Condition of revocation of licence clear accountability to meet service standards**
      - **practice documentation & process measurements**

↬Metamorphosis (Contd.)

- ✓ **New Strategies**
  - ➢ **"Price regulation sets to mimic the pressures of a competitive marketplace"**

    Alexander & Mayer
  - ➢ **Initiatives to improve productivity, efficiency, costs and build competitive organisation**

Metamorphosis (Contd.)

✓ New Strategies (Contd.)

- Strategies aimed at reducing cycle time, optimising manpower and improving enterprise management
  - ☐ Leveraging IT to improve productivity extended RDBMS platform for financial reporting, GIS for network & customer management, SCADA for network monitoring in real time
  - ☐ Improving profitability of rural supplies through network engineering, DSM measures and social intervention under energy conservation programme
  - ☐ Developing unregulated businesses by utilising domain knowledge to generate additional revenue

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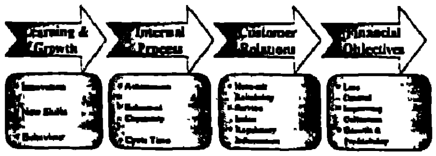
Metamorphosis (Contd.)

✓ New Strategies (Contd.)

- Strategy implementation built on people and process capabilities for meeting service quality, regulatory compliances and financial objectives

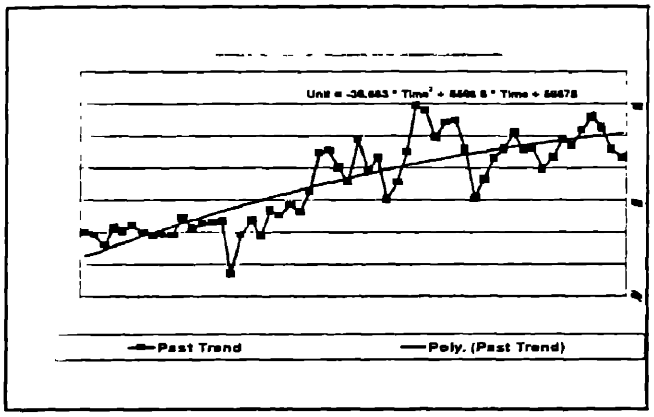


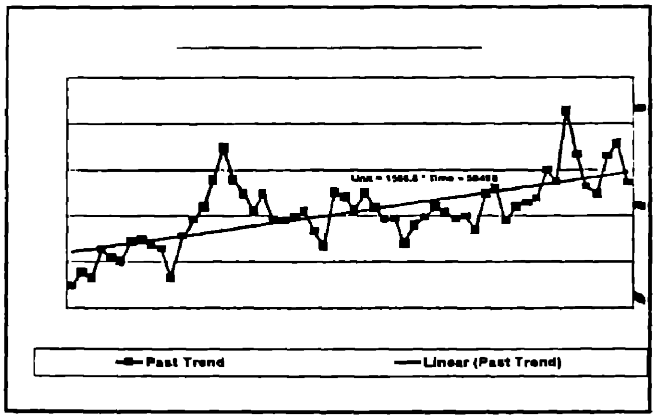
Strategy Map

Metamorphosis (Contd.)

✓ New Skills

- Enhanced processes require new employee capabilities RDBMS, GIS and SCADA
- New competences to improve the quality and robustness of data
  - ☐ regression analysis of demand estimates by extrapolating the past data employing multi-variate and Time Series models





↳Metamorphosis (Contd.)

- ✓ New Skills (Contd.)
  - ➢ Innovations drive process and system improvements
    - ☐ On-line collection monitoring
    - ☐ Village metering
    - ☐ Modular supply for agricultural pumps
  - ➢ Credible system of performance-linked remuneration package

New Goals

Table 1

Efficiency Indicators

	1999-00	2000-01	2001-02
Energy Loss (%)	9.48	8.39	8.22
Gross Collection to Billing (%)	96.91	97.10	97.22

Table 2

Manpower Productivity

	1999-00	2000-01	2001-02
Employees per MU of Energy Sales	0.42	0.45	0.41
Employees per 1000 Consumers	4.89	4.78	3.87
Employees per 10 MVA Connected Load	8.30	8.25	7.12
Employees per 100 ckt. Km. of Network	7.17	7.32	6.15

All India Employee per MU 2.63

Regulatory Reinforcement

- ✓ **Complexities**
  - No baseline data to fix efficient levels of cost and productivity rate utility business not on commercial lines, also private licensees have little commonality
  - Econometric analysis cannot always capture local dynamics and individual firm behaviour uncontrollable costs may not be identifiable or stable over time
  - Licensee captive to business and social environment, affecting
    - ☐ Contract enforceability
    - ☐ Demand estimates
    - ☐ Revenue collection
    - ☐ Uncontrollable costs

Regulatory Reinforcement

- ✓ **Solutions**
  - MYT a viable option with starting information and allowance for future variances against exogenous factors
  - Annual cost of operation under MYT as yardstick linked to defined efficiency level and growth parameter
  - Capacity building for objective assessment of performance and cost levels
    - ☐ Analysis / comparison of licensee's explanations over past performance and forecasts
    - ☐ Performance and asset management audits to monitor network reliability and future adequacy
    - ☐ Cost driver analysis to link asset condition and usage, capital and maintenance expenditure

Towards A Level Playing Field

- ✓ Regulation of government-owned utilities difficult in the absence of profit motive
- ✓ Curbing market power of a natural monopoly not easy differences of ideology govern relationships with private licensees
- ✓ Provision of Appeal in High Court open to abuse for lengthening the process Tribunal as ADR
- ✓ Licensees not having the option of buying power from *market open access, third party sale, wheeling* principles yet to be defined
    - ➢ Consumers do not get the benefit of economic sourcing

Towards A Level Playing Field (Contd.)

- ✓ Little enforcement of Grid Code – Regulator to be more *active to prevent indiscretions in load management*
    - ➢ No practice of event reporting and advance information
- ✓ Regulatory lag creates uncertainties of costs, investments, but timely decisions enable anticipatory actions
    - ➢ Weak case for raising finances if accounts are qualified
- ✓ Entrepreneurial spirit will drive technological improvements – but with regulatory support
    - ➢ Energy efficiency initiatives
    - ➢ Lifeline tariff design
    - ➢ Managerial incentives

Thank You

Martín Augusto Rodríguez Pardina
Former Executive Director
Economic Regulation Research Centre
Av. Córdoba 1883 4° 7 (1120)
Capital Federal, Argentina
Tel/Fax: (+54 11) 43120366
E-mail: marp@macroenergia.com

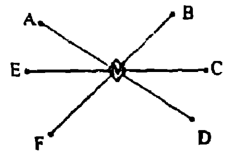
Martín did PhD in Economics from University of Cambridge during 1998. He was awarded several prizes and honour from National University of Córdoba, National Science and Technology Council, University of Cambridge and United Nations Development Program / World.

He was associated with Economic Regulation Research Centre, Universidad Argentina de la Empresa as Executive Director, MacroEnergía S.A. as Director, Ente Nacional Regulador de la Electricidad (National Electricity Regulation Agency) as Senior Economist. He was also associated with The World Bank – Economic Development Institute as consultant over the years.

Martin has published several books, reports and articles in the field. Martin was born in 1961 and having two daughters.

Economic Aspects of Network Industries

- Networks are made up of a group of complementary elements.



AM and MB have an economic meaning: they are complementary

Categories of Network Industries

- One-way Networks

  Networks where the service flows economically in only one direction. Electricity, gas, water, paging, television. Every vertically integrated industry
- Two-way Networks: A-B ; B-A

  They represent services which can be identified economically. Typically, telecommunications

Externalities

- Definition: Effect generated on an economic agent by the acts of another/ others.
- There are two types:
  - In the Production (New services such as roads increase the value of real property nearby)
  - In the Consumption (Highway traffic jams)

Network Externalities

There are two types:

- In the Production (New telephone lines increase the demand of all services and not only local calls).
- In the Consumption (The demand of faxes increases in accordance with the number of fax machines installed)

Vertical Relations and Access

- Complete separation of natural monopoly
- Integration of monopoly and competitive stages
- Accounting separation
- Transmission pricing problem
- Access pricing and conditions
- Cost allocation problems

Main Issues in Network Industries

- If network ownership is centralized:
  - Costs
  - Expansion

Main Issues

- Decentralized/unbundled ownership:
  - No competition in the provision of each component (different companies for transportation and distribution).
    - Efficiency of vertically unbundling
  - There is competition in the provision of at least one of the components ⇒
    - Access/Interconnection

Access. Objective.

An efficient design of access price:

- Compensates for the use of third parties facilities
  - cover total efficient costs of the service provider
- Sends efficient investment signals
  - promote static efficiency in terms of level and structure of prices
- Provides market signals to entrants
  - promote dynamic efficiency through an optimal level of entry

Dimensions of access policy

- Price
  - Level
  - Structure
- Quality
- Geographical location of connection points
- Interconnected functions
- Technical specifications

Access. Types

- Interconnection of competitive service providers
- Interconnection of non-competitive service providers

Access

- What is the mechanism to decide how to determine access conditions?
  - Regulation
  - Private agreements
- Price level and structure
- Technical conditions
- Accounting separation

Access

- Price components
  - Dedicated assets
    - paid by the entrant
  - Costs of service provision
    - basic problem: how to calculate these costs

Access

- Alternatives for access price calculation
  - Calculation based on final prices
  - Accounting methods + "reasonable" rate of return
  - Forward-looking costs = Long-term incremental cost
  - Efficient Component Pricing Rule

Access

- Price structure :
  - Rate by capacity
  - Average vs non-average
  - Tariff menu
  - Should final users pay?

Access

- How to prevent abuse of a dominant position?
  - Open access **Demand interconnection.**
  - Imputation **Termination charge applied to own clients should be equal to the one applied to the rest of the carriers.**
  - Reciprocity **Termination charge between networks should be equivalent.**
  - Unbundling **The entrant purchases only the functions or elements necessary for its service.**

Free or regulated tariffs?

- It basically depends on market structure
  - The number of alternative providers
  - Whether they have capacity to set prices
- It depends on the degree of vertical integration of the industry
- In general, access tariffs tend to be regulated by conditions similar to a natural monopoly

Interconnection tariffs

- How should incumbent operator's costs be calculated:
  - "book-value" vs forward-looking costs?
- Should operator's opportunity cost be included or just the cost of using the network?

Historic Costs

- Advantages:
  - Simple calculation
- Disadvantages:
  - There is no relation with the value of the services provided
  - They reflect former market conditions
  - They are highly sensitive to valuation criteria (specially, the calculation of amortizations)

Forward-looking Costs

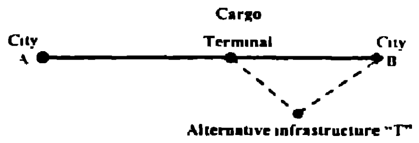
- Advantages.
  - They reflect real market conditions.
  - They are calculated according to the present and the forward-looking demand
  - They give the right signals about investments
- Disadvantages
  - Highly complex calculation
  - The LTIC may not allow recovery of common or joint costs.

Fully Distributed Costs

- Advantages.
  - It allows total cost recovery.
  - It facilitates their calculation
  - It allows several valuation criteria
- Disadvantages.
  - Distribution criteria among the different services are arbitrary
  - It enables cross-financing between goods/services

Interconnection in a competitive regime

- Consider the following network:



Different models of network organization

- A) Intermodal Competition
  - ASB and STB are provided independently
- B) Concentrated ownership
  - All the network components belong to the same operator
- C) Competitive interconnection
  - ASB, ST and TB represent three separate operators
- D) Vertical separation with competition
  - AS and SB belong to different operators and STB is their competitor

Main Data

- P_{ASB} service price between A and B using terminal S
- P_{AS}, P_{SB}, and P_{STB} prices of components AS, SB and STB.
- $P_{ASTB} = P_{AS} + P_{STB}$ service price between A and B using alternative T

Possible results with intermodal competition

- $P_{ASB} > P_{AS}$ if the demands ASB and ASTB are similar.
- $P_{ASB} \leq P_{AS} + P_{STB}$ by double marginalization although this situation can be reverted if the entrant firm is small.

Possible results with intermodal competition

- $P_{ASB} < P_{AS}$ if the demand of AS is low and relatively non-elastic.

Rule of the "Efficient Component"

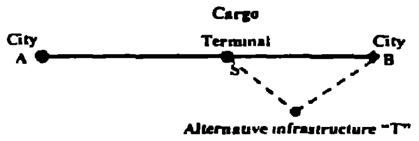
- Origin: New Zealand case. 1992.
- Authors: William Baumol, Robert Willig, Frank Kahn and Janusz Ordover.

Efficient Component Pricing Rule (ECPR)

- Access prices should allow entry of efficient producers only (i.e. those who can provide the service at a lower cost than the incumbent).
- The access price should cover the incremental cost of access plus the opportunity cost (of not providing the service) for the incumbent.

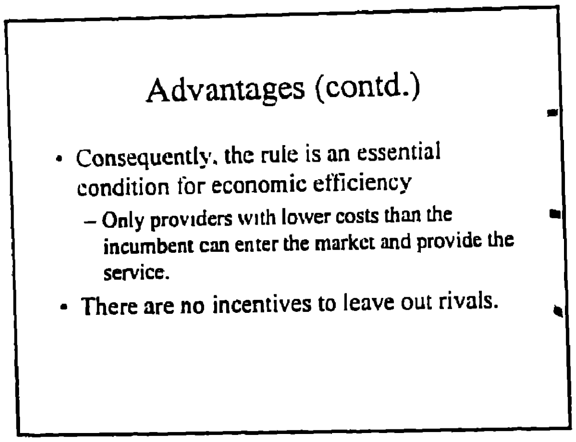
Example

- Final price is $10. The incremental cost of AS and SB is $3 each.



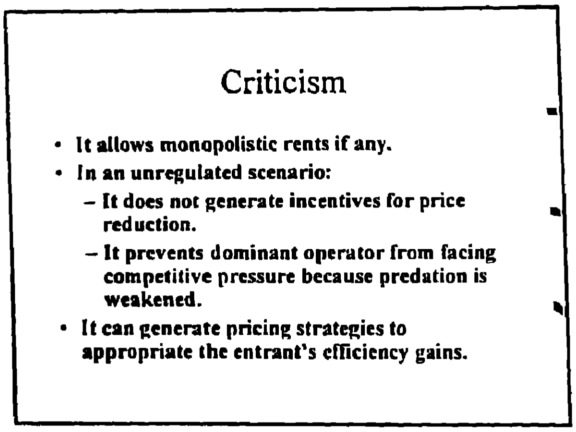
Advantages

- Proposition. *Access charge must be equal to $7 = $10 - $3.*
- If the entrant has an incremental cost lower than $3 in the competitive phase then, it can charge a final price lower than $10 and pay the access price.
- If access price were $5 5, the entrant with an incremental cost of $4 could replace the incumbent operator and raise a lower price, although it would be more inefficient.



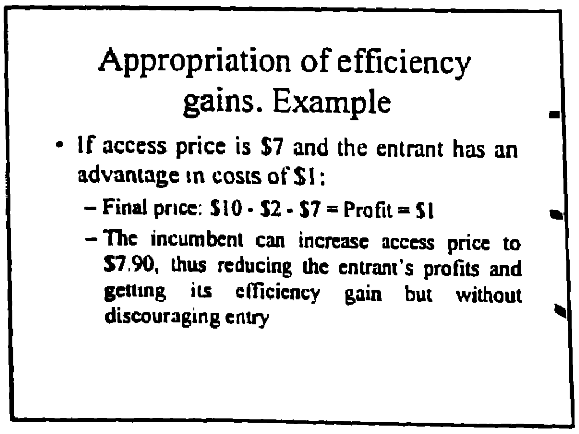
Advantages (contd.)

- Consequently, the rule is an essential condition for economic efficiency
  - Only providers with lower costs than the incumbent can enter the market and provide the service.
- There are no incentives to leave out rivals.



Criticism

- **It allows monopolistic rents if any.**
- **In an unregulated scenario:**
  - **It does not generate incentives for price reduction.**
  - **It prevents dominant operator from facing competitive pressure because predation is weakened.**
- **It can generate pricing strategies to appropriate the entrant's efficiency gains.**



Appropriation of efficiency gains. Example

- If access price is $7 and the entrant has an advantage in costs of $1:
  - Final price: $10 - $2 - $7 = Profit = $1
  - The incumbent can increase access price to $7.90, thus reducing the entrant's profits and getting its efficiency gain but without discouraging entry

Criticism (contd.)

- The network has both fixed ($1) and variable costs (short-term incremental costs =$1). Fixed costs turn into stranded costs when applied to the activity.
- Considering P=$10, if the monopolist sets access price at $9, it only allows entrant's cost recovery.

Criticism (contd.)

- The incumbent's situation is different. When calculating access charge, it deducts only its incremental cost.
- This is an advantage for having entered the market first.
- Therefore, the principle of competitive neutrality is breached.

Conclusions

- Optimal access prices and conditions depend on regulatory objectives.
- There are trade-offs between different objectives which need to be balanced
- The particular technology of the sector needs to be taken into account

Advice

- Apply reciprocity criteria. It avoids unnecessary discrimination by dominant network.
- The imputation rule is not enough under vertical integration conditions.
- Unbundling by itself is not enough to generate pro-competitive interconnection prices.

S.K. Jena
Director (Tariff)
Orissa Electricity Regulatory Commission
E-mail: shital_jena@rediffmail.com

Shri S.K. Jena, graduated in Electrical Engineering in 1967 and holds a Post Graduate Diploma in Financial Management. He belongs to the Orissa service of Electrical Engineers and has worked under the Government of Orissa, Orissa State Electricity Board and the Orissa Electricity Regulatory Commission. His work experience includes execution of Balimela Hydro Electric Project, in Operation and Maintenance of Extra High Tension Grid Sub-station and transmission lines, protection, control, metering of power system upto 1987.

In 1987 he joined the Commercial Wing of OSEB being in charge of Electricity Tariff, Supply Regulations, contracts and agreements with consumers, transaction of power with generating stations including inter-State transaction of power of the eastern region. He subsequently joined the Power Sector Reform Project in 1994 under the Govt. of Orissa as a Member of Legal & Regulating Working Group and Metering Interface Working Group.

After formation of Orissa Electricity Regulatory Commission he was appointed as Director (Engineering) and Director (Tariff) and preferred to join as Director (Tariff). He leads a multi-disciplinary team of professionals which includes Engineers, Economists, Accountants, Audit Officers and looks after the overall pricing policy and associated commercial activities like capacity procurement, planning and investment, load forecast, consumer services, etc.

He has attended a number of Seminars and Conferences and has hands on experience in tariff formulation and design of tariff in the regulated environment in association with National Economic Research Associates of USA in his present job and has also been trained in regulation of electricity sector at the Michigan State University of USA.

SAFIR CORE TRAINING PROGRAMME ON INFRASTCUTURE REGULATION & REFORM

HOW TO RUN A PRICE REVIEW

S.K. JENA
DIRECTOR (TARIFF)
ORISSA ELECTRICITY REGULATORY COMMISSION

16TH SEPTMEBER, 2002, GOA, INDIA

CONTENTS

- PHILOSOPHY OF PRICE CONTROL
- PRINCIPLE OF COST ALLOCATION
- OERC PROCEDURES
- INTERNATIONAL PRACTICE
- CASE STUDY - GRIDCO

PHILOSOPHY OF PRICE CONTROL

PRINCIPLES OF ELECTRICITY PRICING

- JUST & REASONABLE
- PROMOTE ECONOMIC EFFICIENCY IN SUPPLY & CONSUMPTION OF ELECTRICITY
- MUST BE IN CONFORMITY WITH THE RELEVANT LEGAL PROVISION
- PROVISION OF SAFE AND RELIABLE SERVICE AT REASONABLE PRICE
  - LIMITATIONS DUE TO AFFORDABILITY BY SMALL CONSUMERS AND COMPETITIVENESS OF THE INDUSTRIAL PRODUCT
  - ADEQUACY OF RETURN TO ENCOURAGE CONTINUED INVESTMENT COMPARABLE TO OTHER BUSINESS WITH SIMILAR RISK

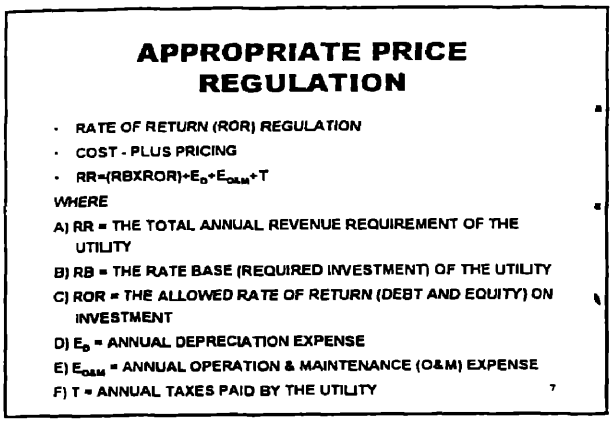
REGULATORY FRAMEWORK

- BEST SOLUTION-DEVELOPMENT OF MARKET FORCES
- INFRASTRUCTURE INDUSTRY LIKE ELECTRICITY IS A PUBLIC UTILITY
- IT'S A NATURAL MONOPOLY
  - ASSOCIATED WITH ECONOMIES OF SCALE
  - DUPLICATING TRANSMISSION & DISTRIBUTION IS INEFFICIENT UNECONOMIC AND AESTHETICALY UNACCEPTABLE
- REGULATORY FRAMEWORK TO ACHIEVE NATURAL EFFICIENCY
- EFFICIENCY MAY RESULT IN COMPETITIVE PRICING WHAT WOULD HAVE BEEN ACHIEVED BY MARKET FORCES
- REGULATOR SERVES AS A SURROGATE FOR THE MARKET

ESSENTIALS OF PRICE REVIEW

DETERMINATION OF

- REVENUE REQUIREMENT
- EXPECTED REVENUE FROM CHARGES
- ADDITIONAL RESOURCE MOBILISATION



APPROPRIATE PRICE REGULATION

- RATE OF RETURN (ROR) REGULATION
- COST - PLUS PRICING
- $RR=(RB \times ROR)+E_D+E_{O\&M}+T$

WHERE

A) RR = THE TOTAL ANNUAL REVENUE REQUIREMENT OF THE UTILITY

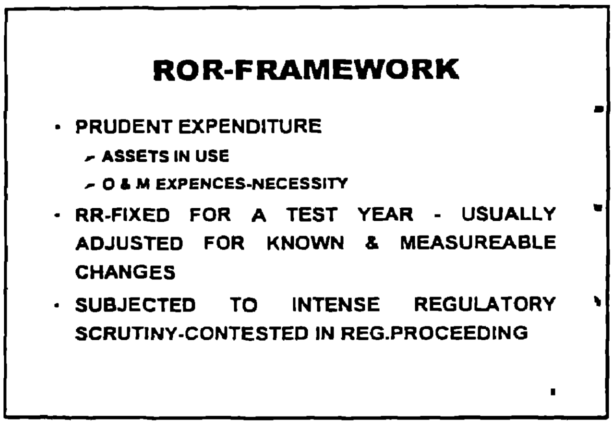
B) RB = THE RATE BASE (REQUIRED INVESTMENT) OF THE UTILITY

C) ROR = THE ALLOWED RATE OF RETURN (DEBT AND EQUITY) ON INVESTMENT

D) E_D = ANNUAL DEPRECIATION EXPENSE

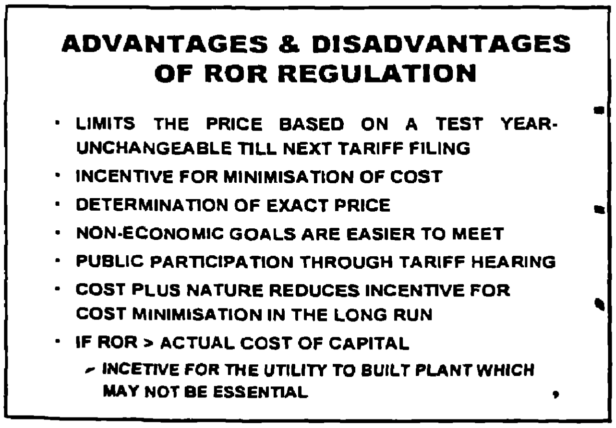
E) $E_{O\&M}$ = ANNUAL OPERATION & MAINTENANCE (O&M) EXPENSE

F) T = ANNUAL TAXES PAID BY THE UTILITY



ROR-FRAMEWORK

- PRUDENT EXPENDITURE
  - ASSETS IN USE
  - O & M EXPENCES-NECESSITY
- RR-FIXED FOR A TEST YEAR - USUALLY ADJUSTED FOR KNOWN & MEASUREABLE CHANGES
- SUBJECTED TO INTENSE REGULATORY SCRUTINY-CONTESTED IN REG.PROCEEDING



ADVANTAGES & DISADVANTAGES OF ROR REGULATION

- LIMITS THE PRICE BASED ON A TEST YEAR-UNCHANGEABLE TILL NEXT TARIFF FILING
- INCENTIVE FOR MINIMISATION OF COST
- DETERMINATION OF EXACT PRICE
- NON-ECONOMIC GOALS ARE EASIER TO MEET
- PUBLIC PARTICIPATION THROUGH TARIFF HEARING
- COST PLUS NATURE REDUCES INCENTIVE FOR COST MINIMISATION IN THE LONG RUN
- IF ROR > ACTUAL COST OF CAPITAL
  - INCETIVE FOR THE UTILITY TO BUILT PLANT WHICH MAY NOT BE ESSENTIAL

PERFORMANCE BASED REGULATION

- ELIMINATES THE COMMAND AND CONTROL ASPECT OF ROR REGULATION
- SUBSTITUTES BY A SYSTEM OF INCENTIVE OR PENALTIES FOR PERFORMANCES OUTSIDE 'NORMAL' RANGE
- EXAMPLE OF SIMPLE PBR - FOCUS ON A SINGLE AREA OF UTILITY SUCH AS PLANT RELIABILITY OR SYSTEM LOSS
- EXAMPLE OF PBR - CUSTOMER SATISFACTION, SYSTEM OUTAGE, LOAD GROWTH, INFLATION, PRICES, ETC.

CHARACTERISTCS OF PBR

- FOCUS ON CONTROLLABLE ASPECTS OF THE UTILITY'S OPERATION
- IMPLEMENTATION OVER A LONGER DURATION
- INTER-RELATIONSHIP WITHIN UTILITY SHOULD BE RECOGNISED
- SYMMETRY IN REWARD AND PENALTY
- NO UNDUE ENRICHMENT OR THREATENING OF FINANCIAL VIABILITY THROUGH REWARD AND PENALTY
- TARGET TO BE SET ON EXTERNAL AND NORMATIVE STANDARDS
- FOCUS OF A GOOD PBR IS RESULT AND NOT THE METHODS

ADVANTAGES & DISADVANTAGES OF PBR

- ADVANTAGES SAME AS ROR +
- A DEFINITE INCENTIVE FOR COST MINIMISATION CAN BE BUILT
- A WORKING PBR MAY REDUCE THE NEED FOR REPEATED TARIFF FILING
- DISADVANTAGES - LOWER SERVICE QUALITY FOR PURSUING MONITARY INCENTIVES
- LESS REGULATORY SCRUTINY
- LESS PUBLIC INPUT TO THE TARIFF PROCESS AS HEARINGS ARE NOT FREQUENT LIKE ROR
- FOR PROPER DESIGN COMPREHENSIVE RELIABLE DATA ARE ESSENTIAL AND SHOULD BE AMENABLE TO INDEPENDENT VERIFICATION

RPI - X REGULATION

- FORM OF INCENTIVE REGULATION
- PRICE OF A MONOPOLY SERVICE IS ALLOWED TO INCREASE BY THE RATE OF INFLATION (RPI) MINUS AN 'X' FACTOR
- X - FACTOR TO BE SET FOR 5 YEARS TO PLAN LONG TERM INVESTMENT
- CHEAPER WAYS OF ATTAINING PERFORMANCE TARGET WILL INCENTIVES THE UTILITY

TEST YEAR APPROACH

- FORWARD LOOKING TEST YEAR AS THE BASIS OF RR DETERMINATION
  - TARIFFS ARE SET FOR FURTURE TIME PERIOD
  - LEVEL OF COST INCURRED IN A PAST TEST PERIOD MAY NOT CORRESPOND WITH THE COST TO BE INCURRED DUE TO IN FUTURE PERIOD
  - APPROPRIATE TO USE FORWARD LOOKING TEST YEAR AS THE BASIS FOR RR DETERMINATION
- TEST YEAR REVENUE REQUIREMENT
  - ACTUAL PAST COST LEVEL ADJUSTED FOR INFLATION AND KNOWN AND MEASURERABLE CHANGES IN THE FUTURE YEAR

PRINCIPLE OF COST ALLOCATION

COST OF SERVICE STUDY

- DETERMINATION OF RATE BOTH OVERALL AND FOR INDIVIDUAL SERVICES
- COST CAUSATION BY DIFFERENT CATEGORIES OF CONSUMERS
- RECOVERY OF COST FROM CUSTOMERS WITHIN EACH CUSTORMER CLASS
- COST OF EXTENSION OF SERVICE
- DETERMINATION OF REVENURE REQUIREMENT FOR THE MONOPOLY SERVICES

DEVELOPMENT OF RATES FOR UTILITY

- STEP-1 : DEVELOPMENT OF THE TEST PERIOD TOTAL UTILITY REVENUE REQUIREMENT
  - THE LEVEL OF REVENUE TO BE COLLECTED FROM ALL SOURCES
- STEP-2 . ESTIMATE OF REVENUE RECOVERY THROUGH RATES
  - REVENUE RECOVERY FROM ALL SOURCES LESS THE NON-CORE REVENUE
- STEP-3 : COST ALLOCATION PROCEDURE
  - TOTAL RR IS ATTRIBUTED TO CAUSATION OF COST OF EACH CONSUMER CLASS
  - COST ALLOCATION PROCESS
    - FUNCTIONALISATION OF COST
    - CLASSIFICATION OF COST
    - ALLOCATION OF COST AMONG CUSTOMER CLASSES

CONTD..

- STEP-4 : DESIGN OF RATES
  - COST INCURRED BY EACH CLASS IS A MAJOR DETERMINANT REGARDING THE PRICE TO BE CHARGED TO THE CONSUMERS
- REVENUE STABILITY FOR THE UTILITY
- RATE CONTINUITY FOR THE CUSTOMER
- PRACTICAL CRITERIA AS SIMPLICITY AND PUBLIC ACCEPTANCE

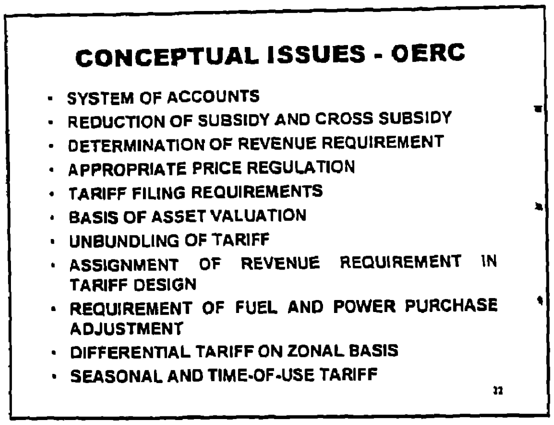
CLASSIFICATION OF COSTS

- DEMAND RELATED COST
  - CAPACITY COST - CAPITAL AND OPERATING EXPENSES IN PROVIDING CAPACITY TO MEET THE MAXIMUM DEMAND OF CUSTOMERS
- ENERGY RELATED COST
  - OPERATING EXPENSES INCURRED BY THE UTILITIES FOR SUPPLY OF KWH AND PRIMARILY FUEL COST
- CUSTOMER RELATED COST
  - CAPITAL AND OPERATING EXPENSES THAT RELATE PRIMARILY TO THE NUMBER AND SIZE OF CUSTOMERS LIKE SERVICE, METERING, BILLING AND A FRACTION OF ANNUAL MAINTENANCE AND CAPITAL COST OF LV DISTRIBUTION SYSTEM

OERC PROCEDURE

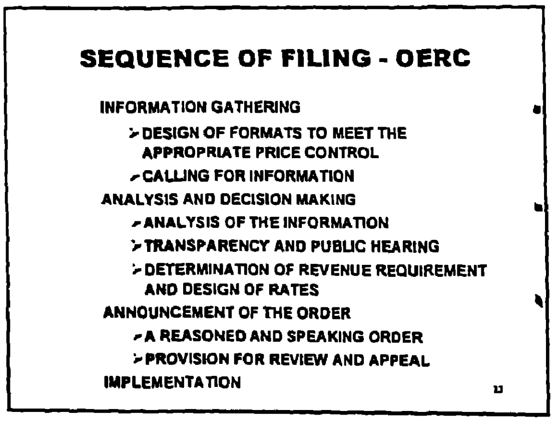
OERC APPROACH

- HYBRID APPROACH - COMBINATION OF ROR AND PBR
- VITH SCHEDULE OF THE SUPPLY ACT 1948 IS A FORM OF ROR REGULATION
  - SCOPE FOR INEFFICIENCY WHEN THERE IS NO PENALTY FOR POOR PERFORMANCE
- PBR SCHEME CAN BE ACCOMMODATE WITHIN THE SIXTH SCHEDULE WITH SUFFICIENT DATA
  - ADDITIONAL RETURN FOR BETTER PERFORMANCE
  - LOWER RETURN FOR UNDER PERFORMANCE
- COMMISSION TO ENSURE PRUDENCE ON EXPENDITURE BUT STANDARD OF PERFORMANCE TO BE DESIGNED CAREFULLY - NO UNDUE ENRICHMENT OR UNDUE PENALTY



CONCEPTUAL ISSUES - OERC

- SYSTEM OF ACCOUNTS
- REDUCTION OF SUBSIDY AND CROSS SUBSIDY
- DETERMINATION OF REVENUE REQUIREMENT
- APPROPRIATE PRICE REGULATION
- TARIFF FILING REQUIREMENTS
- BASIS OF ASSET VALUATION
- UNBUNDLING OF TARIFF
- ASSIGNMENT OF REVENUE REQUIREMENT IN TARIFF DESIGN
- REQUIREMENT OF FUEL AND POWER PURCHASE ADJUSTMENT
- DIFFERENTIAL TARIFF ON ZONAL BASIS
- SEASONAL AND TIME-OF-USE TARIFF



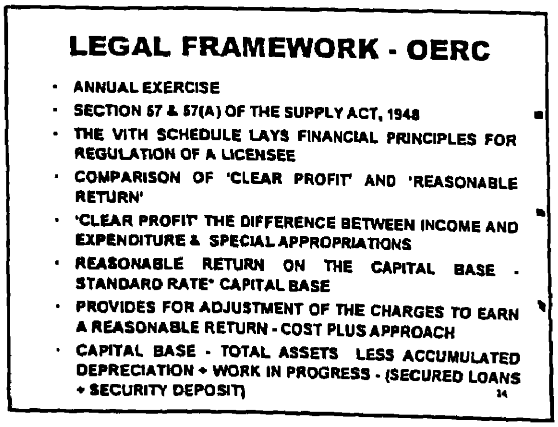
SEQUENCE OF FILING - OERC

INFORMATION GATHERING
- ➢DESIGN OF FORMATS TO MEET THE APPROPRIATE PRICE CONTROL
- ➢CALLING FOR INFORMATION

ANALYSIS AND DECISION MAKING
- ➢ANALYSIS OF THE INFORMATION
- ➢TRANSPARENCY AND PUBLIC HEARING
- ➢DETERMINATION OF REVENUE REQUIREMENT AND DESIGN OF RATES

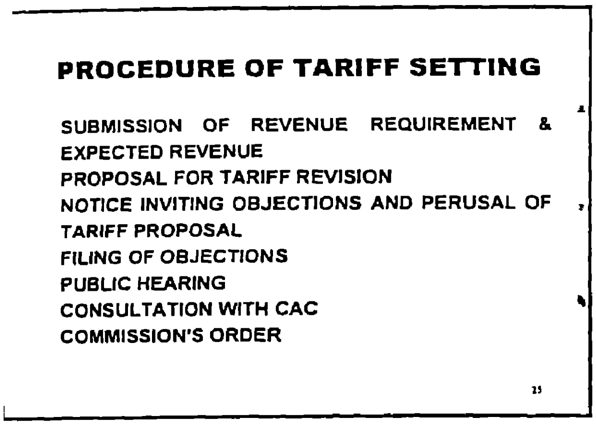
ANNOUNCEMENT OF THE ORDER
- ➢A REASONED AND SPEAKING ORDER
- ➢PROVISION FOR REVIEW AND APPEAL

IMPLEMENTATION



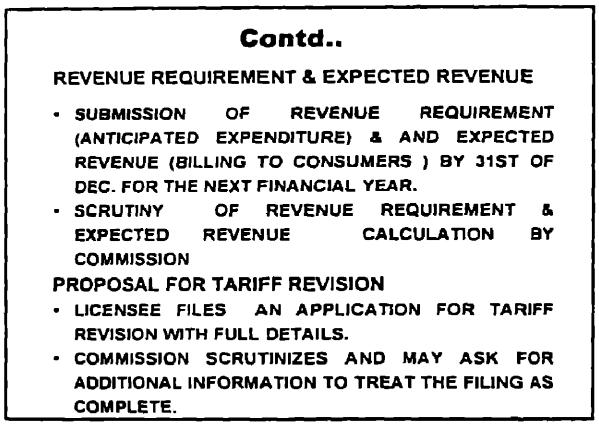
LEGAL FRAMEWORK - OERC

- ANNUAL EXERCISE
- SECTION 57 & 57(A) OF THE SUPPLY ACT, 1948
- THE VITH SCHEDULE LAYS FINANCIAL PRINCIPLES FOR REGULATION OF A LICENSEE
- COMPARISON OF 'CLEAR PROFIT' AND 'REASONABLE RETURN'
- 'CLEAR PROFIT' THE DIFFERENCE BETWEEN INCOME AND EXPENDITURE & SPECIAL APPROPRIATIONS
- REASONABLE RETURN ON THE CAPITAL BASE . STANDARD RATE* CAPITAL BASE
- PROVIDES FOR ADJUSTMENT OF THE CHARGES TO EARN A REASONABLE RETURN - COST PLUS APPROACH
- CAPITAL BASE - TOTAL ASSETS LESS ACCUMULATED DEPRECIATION + WORK IN PROGRESS - (SECURED LOANS + SECURITY DEPOSIT)



PROCEDURE OF TARIFF SETTING

SUBMISSION OF REVENUE REQUIREMENT & EXPECTED REVENUE
PROPOSAL FOR TARIFF REVISION
NOTICE INVITING OBJECTIONS AND PERUSAL OF TARIFF PROPOSAL
FILING OF OBJECTIONS
PUBLIC HEARING
CONSULTATION WITH CAC
COMMISSION'S ORDER



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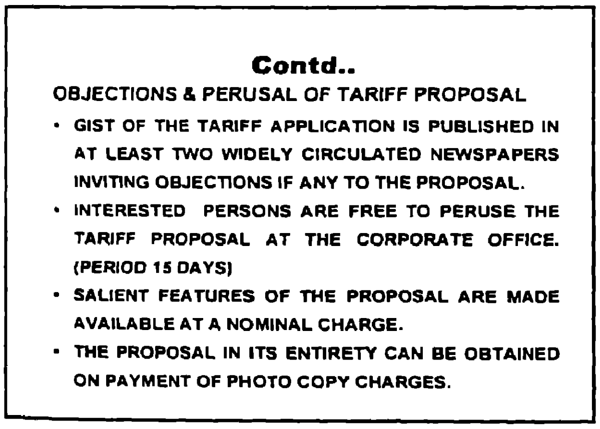
REVENUE REQUIREMENT & EXPECTED REVENUE

- SUBMISSION OF REVENUE REQUIREMENT (ANTICIPATED EXPENDITURE) & AND EXPECTED REVENUE (BILLING TO CONSUMERS) BY 31ST OF DEC. FOR THE NEXT FINANCIAL YEAR.
- SCRUTINY OF REVENUE REQUIREMENT & EXPECTED REVENUE CALCULATION BY COMMISSION

PROPOSAL FOR TARIFF REVISION

- LICENSEE FILES AN APPLICATION FOR TARIFF REVISION WITH FULL DETAILS.
- COMMISSION SCRUTINIZES AND MAY ASK FOR ADDITIONAL INFORMATION TO TREAT THE FILING AS COMPLETE.



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OBJECTIONS & PERUSAL OF TARIFF PROPOSAL

- GIST OF THE TARIFF APPLICATION IS PUBLISHED IN AT LEAST TWO WIDELY CIRCULATED NEWSPAPERS INVITING OBJECTIONS IF ANY TO THE PROPOSAL.
- INTERESTED PERSONS ARE FREE TO PERUSE THE TARIFF PROPOSAL AT THE CORPORATE OFFICE. (PERIOD 15 DAYS)
- SALIENT FEATURES OF THE PROPOSAL ARE MADE AVAILABLE AT A NOMINAL CHARGE.
- THE PROPOSAL IN ITS ENTIRETY CAN BE OBTAINED ON PAYMENT OF PHOTO COPY CHARGES.

Contd..

FILING OF OBJECTIONS

- OBJECTIONS IF ANY ARE FILED WITH THE COMMISSION
- COMMISSION NOTIFIES THE DATE & TIME OF PUBLIC HEARING IN TWO CONSECUTIVE ISSUES OF ORIYA & ENGLISH NEWS PAPER
- OBJECTIONS VALID AND APPROPRIATE ARE TAKEN UP FOR CONSIDERATION DURING PUBLIC HEARING OPEN TO ALL

PUBLIC HEARING

- LICENSEE PRESENTS ITS CASE
- THE OBJECTORS IN PERSON OR THROUGH THEIR ASSIGNED REPRESENTATIVE PRESENT THEIR VIEW POINTS
- THE LICENSEE SUBMITS A REJOINDER TO OBJECTIONS
- THE COMMISSION TAKES NOTE OF ALL THE FACTS PRESENTED BY THE OBJECTORS AND THE LICENSEE

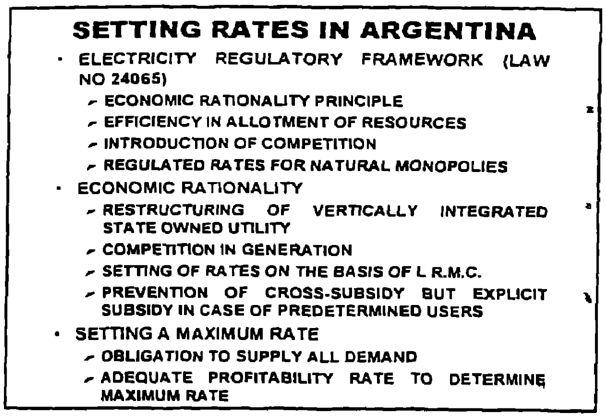
Contd..

TARIFF FINALISATION

- SCRUTINY OF OBJECTIONS AND SUGGESTIONS
- CONSULTATION WITH COMMISSION ADVISORY COMMITTEE

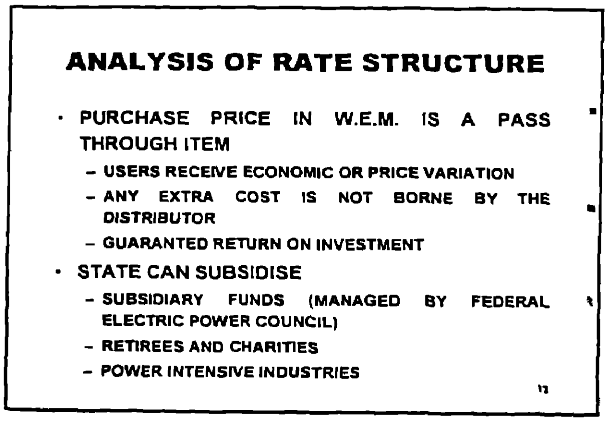
COMMISSION'S ORDER

- WITHIN STIPULATED PERIOD OF 90 DAYS FROM DATE OF FILING OF FULL DETAILS WITH THE COMMISSION
- SPOKEN ORDER IN A PUBLIC HEARING
- PUBLICATION OF THE JUDGMENT IN THE NEWSPAPER
- TARIFF EFFECTIVE AFTER SEVEN DAYS NOTIFICATION
- FUEL SURCHARGE ADJUSTMENT ALLOWED SUBSEQUENTLY
- PROVISION FOR REVIEW AND APPEAL



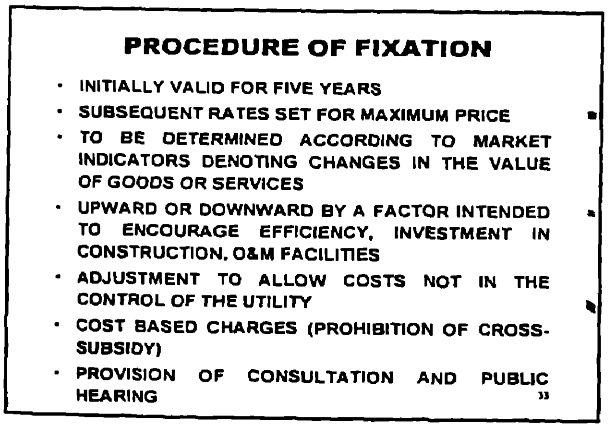
SETTING RATES IN ARGENTINA

- ELECTRICITY REGULATORY FRAMEWORK (LAW NO 24065)
  - ECONOMIC RATIONALITY PRINCIPLE
  - EFFICIENCY IN ALLOTMENT OF RESOURCES
  - INTRODUCTION OF COMPETITION
  - REGULATED RATES FOR NATURAL MONOPOLIES
- ECONOMIC RATIONALITY
  - RESTRUCTURING OF VERTICALLY INTEGRATED STATE OWNED UTILITY
  - COMPETITION IN GENERATION
  - SETTING OF RATES ON THE BASIS OF L R.M.C.
  - PREVENTION OF CROSS-SUBSIDY BUT EXPLICIT SUBSIDY IN CASE OF PREDETERMINED USERS
- SETTING A MAXIMUM RATE
  - OBLIGATION TO SUPPLY ALL DEMAND
  - ADEQUATE PROFITABILITY RATE TO DETERMINE MAXIMUM RATE



ANALYSIS OF RATE STRUCTURE

- PURCHASE PRICE IN W.E.M. IS A PASS THROUGH ITEM
  - USERS RECEIVE ECONOMIC OR PRICE VARIATION
  - ANY EXTRA COST IS NOT BORNE BY THE DISTRIBUTOR
  - GUARANTED RETURN ON INVESTMENT
- STATE CAN SUBSIDISE
  - SUBSIDIARY FUNDS (MANAGED BY FEDERAL ELECTRIC POWER COUNCIL)
  - RETIREES AND CHARITIES
  - POWER INTENSIVE INDUSTRIES



PROCEDURE OF FIXATION

- INITIALLY VALID FOR FIVE YEARS
- SUBSEQUENT RATES SET FOR MAXIMUM PRICE
- TO BE DETERMINED ACCORDING TO MARKET INDICATORS DENOTING CHANGES IN THE VALUE OF GOODS OR SERVICES
- UPWARD OR DOWNWARD BY A FACTOR INTENDED TO ENCOURAGE EFFICIENCY, INVESTMENT IN CONSTRUCTION, O&M FACILITIES
- ADJUSTMENT TO ALLOW COSTS NOT IN THE CONTROL OF THE UTILITY
- COST BASED CHARGES (PROHIBITION OF CROSS-SUBSIDY)
- PROVISION OF CONSULTATION AND PUBLIC HEARING

TARIFF SETTING IN ISRAEL

- ISRAEL ELECTRIC CORPORATION (IEC) HOLDS LICENCE FOR PRODUCTION DISTRIBUTION AND SUPPLY OF ELECTRICITY
- RATE VALID FROM SEPTEMBER 1997 TO 1ST JANUARY 2000 - 7 CENTS/KWH

BASIS OF CALCULATION

- FUEL - BASED ON THE PROJECTED EXPENSES FOR THE PERIOD
- O&M - BASED ON THE APPROVED EXPENSES FROM THE FINANCIAL REPORT OF THE ISRAEL ELECTRIC COMPANY
- CAPITAL SERVICES
  - ACCORDING TO THE APPROVED EXPENSES FROM THE FINANCIAL REPORT
  - YEARLY RETURN ON ACTIVE ASSETS - 5 17% LINKED TO 'CPI'
  - D/E RATIO 2/1 - INTEREST RATE (4.5%:6.5%)
  - RETURN OF WORKING CAPITAL - 4.5%
- ADJUSTMENT OF FOREIGN EXCHANGE FLUCTUATION

UPDATING OF TARIFF

- FUEL PRICE - THE PRICE INDEX OF LIQUID FUEL IS BASED ON THE FUEL IN MEDITERRANEAN BASIN
- COAL - THE PRICE OF COAL IS UPDATED ACCORDING TO THE DECISION OF THE COAL BOARD ON THE BASIS OF RULES DETERMINED BY THE PUBLIC UTILITIES AUTHORITY (PUA)
- OTHER COMPONENTS LINKED TO CPI
- AUTOMATIC UPDATING EVERY SIX MONTHS IF THE CHANGE IN INPUT COST IS MORE THAN 3.5%
- COST OF PRODUCTION VARIES WITH TIME

RATE BASE & THE TARIFF FOR THE YEAR 2000

- NEW TARIFF VALID FOR A FIVE YEAR PERIOD FROM 01.01.2000
- SEPARATE EVALUATION FOR GENERATION, HIGH VOLTAGE TRANSMISSION, MEDIUM VOLTAGE DISTRIBUTION, LOW VOLTAGE DISTRIBUTION AND SALES
- SEPARATE TRANSMISSION TARIFF TO ENABLE IPPS FOR WHEELING TO END USERS
- BENCHMARKING PROGRAMME FOR DETERMINATION OF SEPARATE EARLY EFFICIENCY CO-EFFICIENT FOR SEPARATE IEC ACTIVITIES
- ROR TO BE DETERMINED BY EXTERNAL FINANCIAL CONSULTANTS
- PBR TO BE INTRODUCED WITH EMHPHASIS ON QUALITY DEPENDENT TARIFF

THE HUNGARIAN PRACTICE

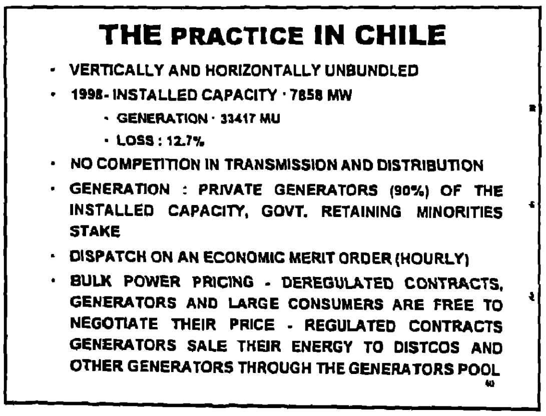
- REGULATION OF PRICES APPLY TO GENERATION, WHOLESALE AND CONSUMER PRICE OF ELECTRICITY (MINISTRY OF ECONOMICS, DECREE NO 45/2000)
- PRICE TO BE SET FROM 1 1 2001 TO 31 03 2004 (PRICE REGULATION TIME PERIOD)
- GENERATION, CO-GENERATION, ELECTRICITY TRANSMISSION AND ELECTRICITY SUPPLY ARE DISTINGUISHED AS SEPARATE ACTIVITIES FOR REGULATION
- FACTORS FOR DETERMINATION OF PRICE FROM 1 1 2001
  - DATA CALCULATION STATISTICS FROM 99 BALANCE SHEET AND PL ACCOUNT
  - INFLATION, EXCHANGE RATE, CHANGE IN LEGAL REGULATION, ASSETS AND COST CHANGES SINCE 2000
  - FORECAST FOR CAPACITY CHANGES, ASSETS AND COST REVIEW, CONTRACTS, ETC

THE PROCEDURE FOR ANNUAL PRICE ADJUSTMENT

- CONCEPT AND PRICE SETTING
- PRICE REGULATION YEAR· 1.1 TO 31.12 OF A YEAR
- REASONABLE COST: LEAST COST CONCEPT
- ALLOWED CAPITAL COST. THE PRICE COMPONENT (IN INITIAL PRICES) CALCULATED BASED UPON THE VALUE OF TANGIBLE AND INTANGIBLE ASSETS USED FOR THE PURPOSE OF ENSURING DOMESTIC ELECTRICITY SUPPLY
- ANNUAL PRICE ADJUSTMENT: PRICE ADJUSTMENT EFFECTED ONCE A YEAR AT THE START OF THE PRICE REGULATION YEAR AND CALCULATED ON THE BASIS OF PRICE FORMULAE

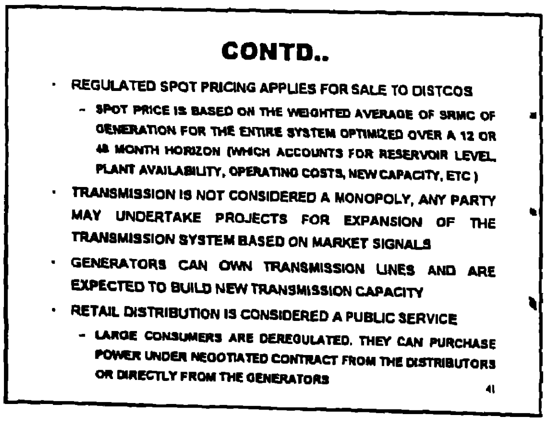
CONTD.

- SUPPLIER TO PROVIDE QUANTITATIVE DATA TO HUNGARIAN ENERGY OFFICER (HEO) THAT IS APPROVED BY THE RELEVANT GOVT. AUTHORITY
- ELECTRICITY SUPPLIER TO MAKE A PROPOSAL CONCERNING CONSUMER SALE
- INDIVIDUAL TARIFF SET ON THE BASIS OF DATA APPROVED BY HEO- AS AGREED BY THE RELEVANT GOVT. AUTHORITY
- DURING ANNUAL (OR EXTRAORDINARY) PRICE ADJUSTMENT, AVERAGE PRICES CALCULATED AND BROKEN INTO TARIFF SUBJECT TO CORRECTION DUE TO CHANGE IN DATA SUPPLIED



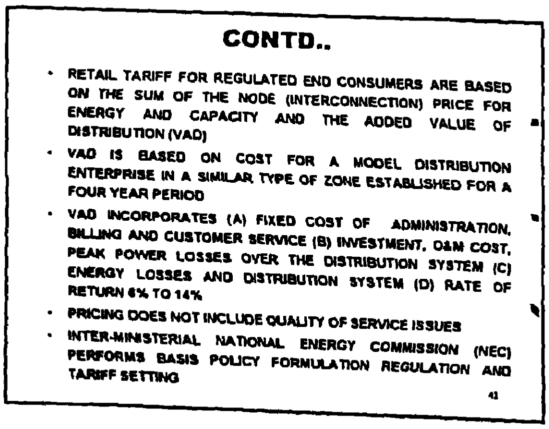
THE PRACTICE IN CHILE

- VERTICALLY AND HORIZONTALLY UNBUNDLED
- 1998- INSTALLED CAPACITY - 7858 MW
    - GENERATION - 33417 MU
    - LOSS : 12.7%
- NO COMPETITION IN TRANSMISSION AND DISTRIBUTION
- GENERATION : PRIVATE GENERATORS (90%) OF THE INSTALLED CAPACITY, GOVT. RETAINING MINORITIES STAKE
- DISPATCH ON AN ECONOMIC MERIT ORDER (HOURLY)
- BULK POWER PRICING - DEREGULATED CONTRACTS, GENERATORS AND LARGE CONSUMERS ARE FREE TO NEGOTIATE THEIR PRICE - REGULATED CONTRACTS GENERATORS SALE THEIR ENERGY TO DISTCOS AND OTHER GENERATORS THROUGH THE GENERATORS POOL



CONTD..

- REGULATED SPOT PRICING APPLIES FOR SALE TO DISTCOS
    - SPOT PRICE IS BASED ON THE WEIGHTED AVERAGE OF SRMC OF GENERATION FOR THE ENTIRE SYSTEM OPTIMIZED OVER A 12 OR 48 MONTH HORIZON (WHICH ACCOUNTS FOR RESERVOIR LEVEL, PLANT AVAILABILITY, OPERATING COSTS, NEW CAPACITY, ETC)
- TRANSMISSION IS NOT CONSIDERED A MONOPOLY, ANY PARTY MAY UNDERTAKE PROJECTS FOR EXPANSION OF THE TRANSMISSION SYSTEM BASED ON MARKET SIGNALS
- GENERATORS CAN OWN TRANSMISSION LINES AND ARE EXPECTED TO BUILD NEW TRANSMISSION CAPACITY
- RETAIL DISTRIBUTION IS CONSIDERED A PUBLIC SERVICE
    - LARGE CONSUMERS ARE DEREGULATED. THEY CAN PURCHASE POWER UNDER NEGOTIATED CONTRACT FROM THE DISTRIBUTORS OR DIRECTLY FROM THE GENERATORS



CONTD..

- RETAIL TARIFF FOR REGULATED END CONSUMERS ARE BASED ON THE SUM OF THE NODE (INTERCONNECTION) PRICE FOR ENERGY AND CAPACITY AND THE ADDED VALUE OF DISTRIBUTION (VAD)
- VAD IS BASED ON COST FOR A MODEL DISTRIBUTION ENTERPRISE IN A SIMILAR TYPE OF ZONE ESTABLISHED FOR A FOUR YEAR PERIOD
- VAD INCORPORATES (A) FIXED COST OF ADMINISTRATION, BILLING AND CUSTOMER SERVICE (B) INVESTMENT, O&M COST, PEAK POWER LOSSES OVER THE DISTRIBUTION SYSTEM (C) ENERGY LOSSES AND DISTRIBUTION SYSTEM (D) RATE OF RETURN 6% TO 14%
- PRICING DOES NOT INCLUDE QUALITY OF SERVICE ISSUES
- INTER-MINISTERIAL NATIONAL ENERGY COMMISSION (NEC) PERFORMS BASIS POLICY FORMULATION REGULATION AND TARIFF SETTING

ASE STUDY - GRIDCO

CLEAR PROFIT

- 'CLEAR PROFIT' THE DIFFERENCE BETWEEN INCOME AND EXPENDITURE & SPECIAL APPROPRIATIONS

A) INCOME FROM SALE OF ENERGY LESS DISCOUNT, METER RENT AND OTHER GENERAL RECEIPTS

B) EXPENDITURE ON GENERATION AND PURCHASE OF ENERGY + DISTRIBUTION AND SALE OF ENERGY + RENTS, RATES AND TAXES + INTERESTS + DEPRECIATION + BAD DEBT, ETC

C) SPECIAL APPROPRIATION TO COVER PREVIOUS LOSSES + TAXES ON INCOME ETC.

- CP = A - (B+C)

CONTD..

- CLEAR PROFIT NOT TO EXCEED REASONABLE RETURN
- METHOD OF DISTRIBUTION OF EXCESS PROFIT
- PROVISION FOR CERTAIN RESERVES

CAPITAL BASE

CAPITAL BASE = A MINUS B

ELEMENTS OF A :

- ORIGINAL COST OF FIXED ASSETS +
- COST OF INTANGIBLE ASSETS +
- ORIGINAL COST OF WORKS-IN-PROGRESS +
- AMOUNT OF INVESTMENT COMPULSORILY MADE UNDER PARA IV +
- AN AMOUNT ON ACCOUNT OF WORKING CAPITAL

CONTD..

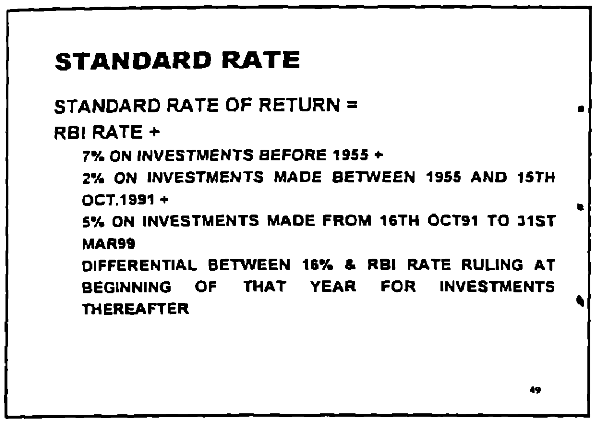
ELEMENT OF B :

- THE AMOUNT WRITTEN OFF OR SET ASIDE ON ACCOUNT OF DEPRECIATION OF FIXED ASSETS
- THE AMOUNT OF ANY LOAN ADVANCED BY BOARD
- THE AMOUNT OF ANY LOANS BORROWED FROM ORGANISATIONS APPROVED BY THE STATE GOVT
- THE AMOUNT OF ANY DEBENTURE ISSUED BY THE LICENSEE
- THE AMOUNT DEPOSITED IN CASH WITH THE LICENSEE BY CONSUMERS. BY WAY OF SECURITY
- THE AMOUNT STANDING TO THE CREDIT OF TARIFFS AND DIVIDENDS CONTROL RESERVE AT THE BEGINNING OF THE YEAR OF ACCOUNT
- THE AMOUNT STANDING TO THE CREDIT OF THE DEVELOPMENT RESERVE AT THE CLOSE OF THE YEAR
- THE AMOUNT CARRIED FORWARD (AT THE BEGINNING OF THE YEAR OF ACCOUNTING) IN THE ACCOUNTS OF THE LICENSEE FOR DISTRIBUTION TO THE CONSUMERS

REASONABLE RETURN

SUM OF THE FOLLOWING

- STANDARD RATE* CAPITAL BASE
- AMOUNT DERIVED FROM INVESTMENTS (OTHER THAN THOSE INCLUDED IN THE CAPITAL BASE) UNDER CLAUSE D OF SUB-PARAGRAPH (1)
- AMOUNT EQUAL TO ONE-HALF OF ONE PER CENTUM ON ANY LOANS ADVANCED BY THE BOARD
- AMOUNT EQUAL TO ONE-HALF OF ONE PER CENTUM ON THE ACCUMULATIONS IN THE DEVELOPMENT RESERVE
- OTHER AMOUNTS AS MAY BE ALLOWED BY THE CENTRAL GOVERNMENT



STANDARD RATE

STANDARD RATE OF RETURN =

RBI RATE +

- 7% ON INVESTMENTS BEFORE 1955 +
- 2% ON INVESTMENTS MADE BETWEEN 1955 AND 15TH OCT.1991 +
- 5% ON INVESTMENTS MADE FROM 16TH OCT91 TO 31ST MAR99
- DIFFERENTIAL BETWEEN 16% & RBI RATE RULING AT BEGINNING OF THAT YEAR FOR INVESTMENTS THEREAFTER

THANK YOU

Ian Alexander
Senior Economist
South Asia Energy and Infrastructure Unit
The World Bank
Tel: +1-202-473-0956
Email ialexander@worldbank.org

Ian has recently joined the World Bank's South Asia Energy and Infrastructure Unit as a Senior Economist focusing on regulatory issues. Prior to this he was one of the two Regional Coordinators for East and South Asia for PPIAF, a multi-donor funding agency that supports the development of an improved environment for private sector participation in infrastructure service provision. Ian has also worked for several UK economic consultancy firms as well as spending over a year working on infrastructure issues at the World Bank in Washington.

For the past 10 years Ian has worked on regulatory issues within the infrastructure and utility industries. This work has covered: transport (buses, rail, airports and ports); energy (electricity and gas); water and sewerage; and telecommunications.

While much of the work Ian has done has concentrated on the detailed aspects of pricing, especially the financial aspects (cost of capital and asset valuation), he has also worked on other important regulatory issues. These include: design of regulatory institutions (including supporting the drafting of laws to establish regulatory offices); capacity building for donor and regulatory staff; access arrangements; industry and market structure; and design of pro-poor regulatory policies.

He has written extensively, including a book on the Cost of Capital and numerous articles on regulatory design. Ian presented at the three previous SAFIR Core Courses and has also presented at the University of Florida-World Bank training course.

Plenary Session 7: Price Regulation – Price-Caps and Incentives

Ian Alexander
Tuesday, September 16th 2002
SAFIR Core Course, Goa

Outline

- Objectives of the regulatory regime
- Framework for assessing different regimes
- Options for regime
- Evidence from the UK

Objectives

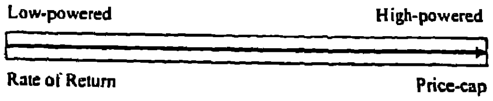
- When determining the appropriate regime, establishing the ability to meet objectives is important
- Possible objectives include
  - expansion of the system,
  - introduction of incentives for efficient operation
  - stable price paths
  - ensuring that outcomes are politically and socially acceptable
- But - these need to be placed in a broader framework

Framework

Issues to consider include:

- incentives for:
  - operating and capital cost minimization
  - regulatory gaming
  - perverse outcomes, (e g Averch-Johnson effect)
  - meeting other objectives:
    - system and/or demand expansion
    - volatility of prices/revenues/profits
    - political acceptability
- risk allocation and cost
- ease of application and regulatory compliance costs

Options



Incentives

Low-powered High-powered

Rate of Return Price-cap

Regime

Rate of Return

- Is the traditional form of US regulation
- At short-intervals, say every-year, a company's historic costs are reviewed
- Prices are set to allow profits that deliver the required rate of return
- This form of regulation is perceived as relatively low risk, so allowing the company to be financed at a lower required rate of return than under other approaches
- Regulation becomes intrusive
  - costs are assessed on their prudency
  - investments are assessed as to their used-and-useful status
- Company has the incentive to gold-plate investments and no reason to seek efficiency savings
- Profit volatility should be minimized but price and revenue volatility may be high

Price-cap

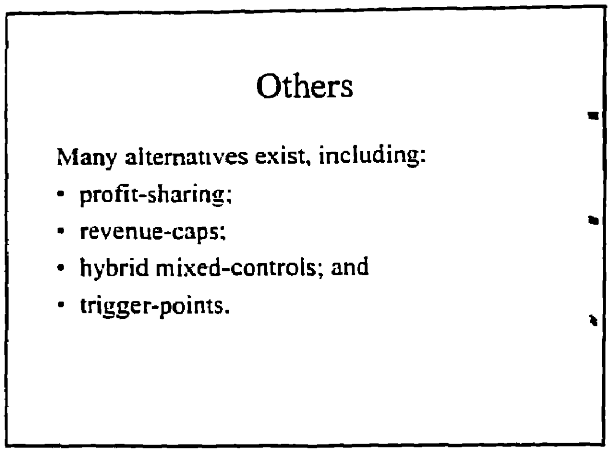
- Is perceived as the other extreme to the rate of return
- A price path is established for a set price control period (in the extreme, to the end of the useful life of the asset, but normally for 3 to 5 years)
- The price path is based on forecast operating and capital costs
- This provides the company with an opportunity, if it outperforms the forecasts, of earning a rate of return higher than required
- These incentives are, however, linked with a higher required return, owing to the greater risk faced by the company
- Regulation is, in theory, less intrusive and the more detailed price review only happens once every 3 to 5 years
- Company has the incentive to game - especially by under estimating demand
- No price volatility but revenue and profits may be volatile

Revenue-Caps

- Rather than setting a price-path, revenue-cap regulation establishes a fixed revenue profile
- Removes any incentive to under-forecast demand
- Limits the upside potential to the company to those cost aspects actually under the control of the company
- Most useful for industries where the fixed costs dominate the cost base
- Requires a correction factor in the formula so that any under or over-recovery of revenue can be corrected within the life of the price control
- Can lead to moderate price and profit volatility
- Has been used in England & Wales for electricity transmission

Price-Caps or Revenue-Caps?

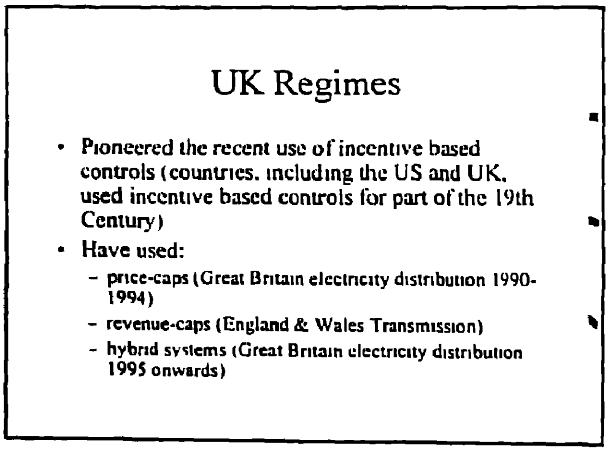
- Price and revenue caps require the same information, but create different incentives
- With a revenue-cap the company can only achieve a higher out-turn rate of return if it is able to cut costs by more than anticipated
- Price-caps also allow extra returns if demand is greater than forecast
- What is the cost structure of the company?



Others

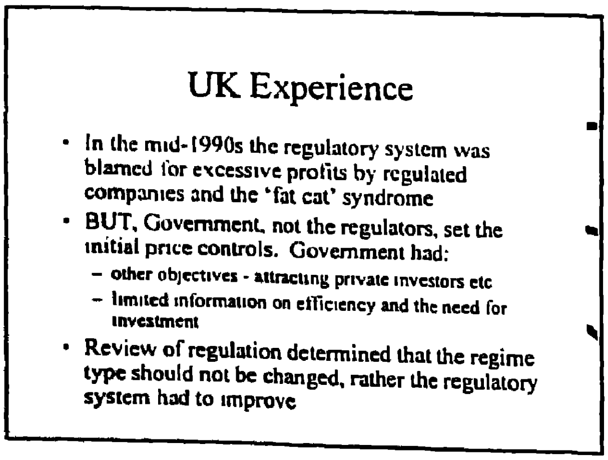
Many alternatives exist, including:

- profit-sharing;
- revenue-caps;
- hybrid mixed-controls; and
- trigger-points.



UK Regimes

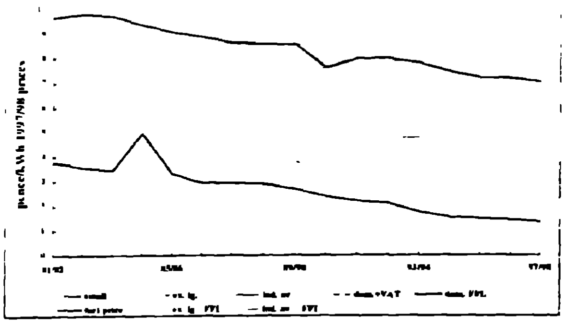
- Pioneered the recent use of incentive based controls (countries, including the US and UK, used incentive based controls for part of the 19th Century)
- Have used:
  - price-caps (Great Britain electricity distribution 1990-1994)
  - revenue-caps (England & Wales Transmission)
  - hybrid systems (Great Britain electricity distribution 1995 onwards)



UK Experience

- In the mid-1990s the regulatory system was blamed for excessive profits by regulated companies and the 'fat cat' syndrome
- BUT, Government, not the regulators, set the initial price controls. Government had:
  - other objectives - attracting private investors etc
  - limited information on efficiency and the need for investment
- Review of regulation determined that the regime type should not be changed, rather the regulatory system had to improve

Example of the Impact of Regulation: CEGB Real electricity prices



DTI Energy Trends

Efficiency Improvements in the UK

- Labour productivity growth

Industry	*1970-80*	*1980-90*
BAA		0 6
2 7		
BT	4 3	7 2
British Gas	4 9	4 9

Source Bishop & Thompson, 1992

- Real operating unit costs

Compound annual real unit operating cost (excluding depreciation) in the 1990s

Industry	*Average*
Water	-3 7
Sewerage	-4 1
Electricity Transmission	-6 5
Electricity Distribution	-6 8
Gas Transmission	-9 1

Source Europe Economics, 1999

Investment Games

- Gaming with respect to investment was important in the 1990s
- In the water and sewerage industry significant amounts of investment were required to meet EU requirements
  - companies announced soon after the 1994 Periodic Review that they would be able to save significant amounts on the investment
  - the regulator 'persuaded' the companies to share the benefits with consumers
- In the electricity distribution industry, the companies claimed significant investment was necessary
  - significant share price increases after the completion of the 1994 price review and big take-over premiums, partly from expected excess profits arising from high investment estimates
  - the regulator re-opened the price control and was able to lower prices by a further 9%, taking into account this information

Summary on Choice of Regime

- Probably no pure regime will meet all the objectives
- Key trade-offs will have to be evaluated - need to be clear about the importance of various objectives
- There may be other options for dealing with some of the issues (political acceptability may be met by changing the length of the price control. .)
- There are opportunities to change systems

Conclusions

- Several frameworks have been developed in this session that can help address the objectives of regulation - key is the incentives that are created for companies
- Need to be clear about the objectives and their importance for the trade-offs
- UK experience shows that you have to separate the impact of the regime type from the problem of information
- Basic, extreme systems provide 'benchmarks' but reality is that some mixed or hybrid system is likely to be used
- Next session considers these hybrids and other practical issues

Measuring Efficiency

Martín Rodríguez Pardina

Productive Efficiency

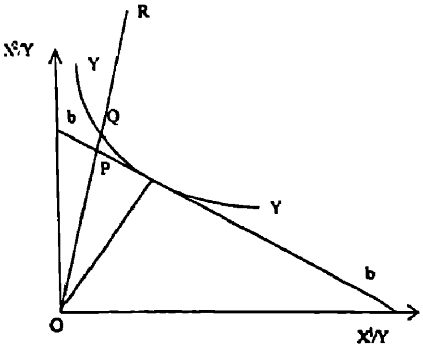
- The ability of the firm to produce at minimum cost. In turn to produce at minimum cost the firm has to:
  - Use the minimum possible amount of inputs given the level of production (technical efficiency)
  - Choose the optimal mix of inputs given their relative prices (allocative efficiency)

Basic Indicators

- Simple comparisons are based on single input output ratios in physical terms such as.
  - employees per customer
  - employees per m3 delivered
  - Km of lines per customer
- Other measures are based on monetary units of input per physical unit of output such as:
  - O&M expenditure per Km of pipes
  - Capital investment per user

Basic Indicators: Limitations

- Offer only a partial view of the productive process
- Given the possibility of input substitution it's use by regulators and distort the behavior of the regulated firm
- Estimation of a production function or frontier to account for multiple inputs and multiple outputs
  - Need to identify useful outputs and inputs with economic value



Efficient Frontier

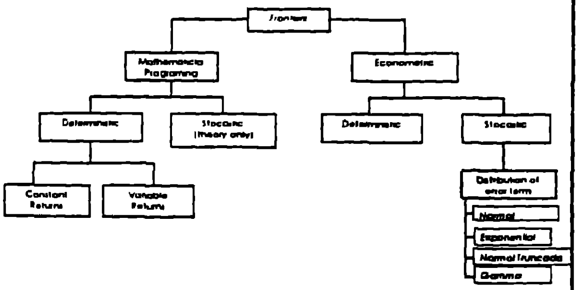
Two main alternative approaches:

- Construct YY form a theoretical function specified on the basis of the technological process.
- Construct YY from empirical data identifying the best practices observed in the real world

Frontier Specification

- Cost and production frontiers can be estimated form empirical data:
  - Production function shows the maximum obtainable product as a function of physical inputs used in the production process
  - Cost function· shows the minimum cost as a function of production levels and inputs prices

Estimation Alternatives



Frontiers

Mathematical Programming

Deterministic

Constant Returns

Variable Returns

Stocastic (theory only)

Econometric

Deterministic

Stocastic

Distribution of error term

Normal

Exponential

Normal Truncada

Gamma

DEA vs. Econometric

- Mathematical programming:
  - No parametric structure is imposed on the frontier (no functional form is specified)
- Econometric:
  - A functional form (parametric structure) is imposed on the frontier

Deterministic vs. Stochastic

- Deterministic: all differences between the frontier and individual firms is accounted as inefficiency
- Stochastic: the difference between the firma and the frontier is separate into inefficiency and a statistical error in the estimation.

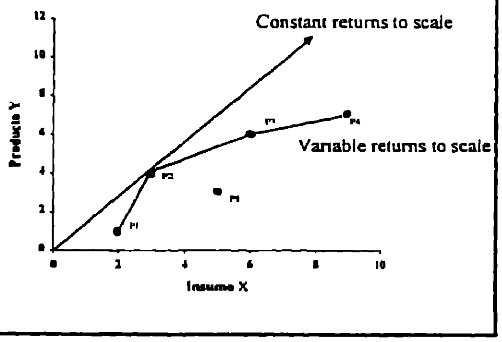
Choosing the Variables -

- Models can be divided in two components
  - Core: defined by theoretical considerations and is accepted or rejected as a whole
  - Environmental variables: identified through a stepwise mechanism Only reasonable and significative variables are included.

Data Envelopment Analysis (DEA)

- ➢The efficiency of a firm is measured in relation to the rest of the sample given the constraint that no firm is above the efficiency frontier (all are on or below the frontier)
- ➢It is an extension of the productivity indicators approach to situations with multiple inputs and multiple products

A simple example



Efficiency measure

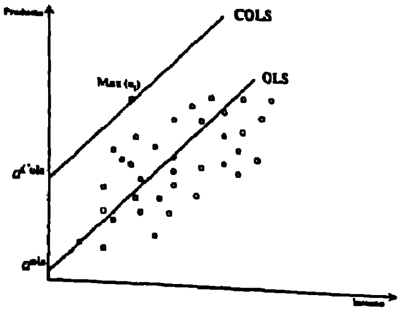
Econometric approach

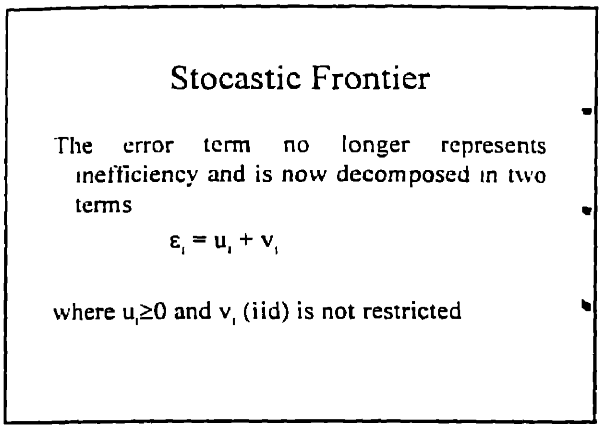
- Inefficiency is measured as the residual of the estimation of a cost or production function.
- It is the portion that can not be explained by known factors (inputs and environmental variables)

Deterministic estimation

- The parameters of the function are estimated using Ordinary Least Squares (OLS) and then the origin is corrected so that all residuals are non negative and at least one is zero (corrected least Squares – COLS)
- The corrected error is given by $\varepsilon_i = e_i - \text{Max}(e_i)$ where e_i are the residuals of the OLS regression
- The efficiency of firm i is given by i is $EF_i = \exp(\varepsilon_i)$

Frontera COLS



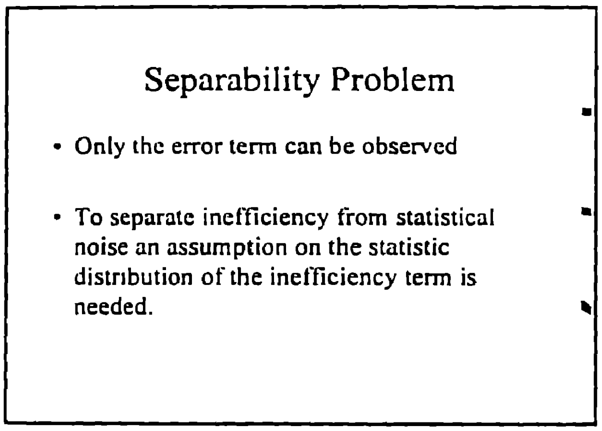


Stocastic Frontier

The error term no longer represents inefficiency and is now decomposed in two terms

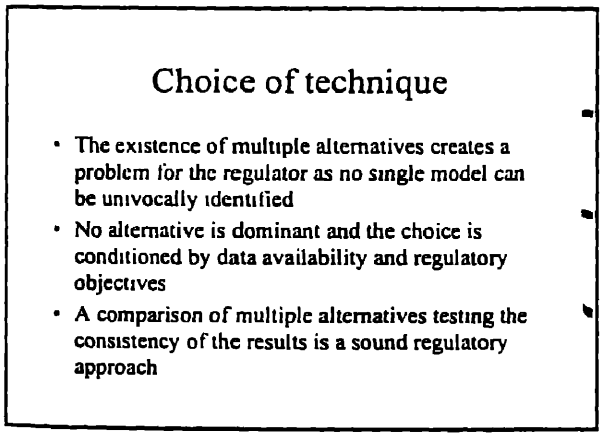
$$\varepsilon_i = u_i + v_i$$

where $u_i \geq 0$ and v_i (iid) is not restricted



Separability Problem

- Only the error term can be observed
- To separate inefficiency from statistical noise an assumption on the statistic distribution of the inefficiency term is needed.



Choice of technique

- The existence of multiple alternatives creates a problem for the regulator as no single model can be univocally identified
- No alternative is dominant and the choice is conditioned by data availability and regulatory objectives
- A comparison of multiple alternatives testing the consistency of the results is a sound regulatory approach

An example

- The Relative Performance of Electricity Distribution Firms in South America

Antonio ESTACHE
ECARES & World Bank
Martin A. ROSSI
Linacre College, University of Oxford
Christian A. RUZZIER
Centro de Estudios Economicos de la Regulacion, UADE
Departamento de Economia y Finanzas, UADE

Context

- 1990s: infrastructure reform processes in South America
- "Privatization" wave quite extensive, in particular in electricity, but not encompassing
- Main issue: continued problem with implementation of regulatory decisions due to the regulator's lack of information

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Specification of the model

- Regulatory choices involved in the estimation of an efficient frontier:
  - theoretical vs. empirical function
  - cost vs. production function
  - parametric vs non-parametric techniques
    - consistency conditions → cross-checking of results

Chossing a Model

- **Yardstick comparisons as a "learning by doing" process driven to a large extent by informational constraints**
- **Need to try different possible options and see what they tell us**

Data and estimation (1)

- Unbalanced panel of 28 firms observed in the period 1994-99 (137 observations)
- Argentina (5 firms, 3 privately-owned), Bolivia (3, 2), Brazil (1, 1), Chile (2, 2), Colombia (2, 0), Ecuador (4, 3), Paraguay (1, 0), Peru (4, 1), Uruguay (1, 0), and Venezuela (5, 4)
- The initial estimated production function is
- Output Total sales (GWh)
- Inputs 1 Number of permanent employees
- 2 Distribution network (km)
- Environmental variables: 1 Customer density
- 2. Market structure

Data and estimation (2)

- DEA model:
  - input orientation vs. output orientation
  - constant vs variable returns to scale
  - modeling of environmental variables
- Econometric model:
  - ML vs. GLS
  - fixed-effects vs random effects

Data and estimation (3)

Variable	OLS	GLS
Intercept	0.272 (0 77)	-0 070 (-0 12)
Ln EMPLOYEE	1 026 (22 00)	0.301 (6 00)
Ln NET	0 086 (1 89)	0 593 (11 38)
DENS	0.002 (9 93)	0 002 (4 99)
STRUC	-2.926 (-6 02)	-1 139 (-5 49)

The dependent variable is Ln SALES The t statistics are in parentheses

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Looking for Consistency

- Different approaches to efficiency measurement
  - consistency needed to maximize usefulness of efficiency frontiers
- The efficiency measures generated by the different techniques should show internal and external consistency along 4 dimensions:
  - in their efficiency levels,
  - in their rankings
  - in identifying of the best and the worst firms, and
  - over time and with the conditions under which the industry evolves

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Consistency of efficiency levels

Approach	DEA-V	GLS
Mean	0 886	0 143
Deviation	0 189	0 187
Maximum	1 000	1 000
Minimum	0 384	0 019
Sample	28	28

- Kruskal-Wallis (non-parametric) test the 2 populations from where the samples came have identical medians.
- We cannot reject this assumption
- => this consistency condition is not met.

Consistency of rankings

- Even if efficiency levels are not consistent across methods, still possible that methods generate similar rankings of efficiency scores
- Identifying the ranking would help to discriminate the X factor among the firms in the sector
- Spearman's ranking correlation between DEA-V and GLS was not significantly different from 0
  - the null hypothesis of zero correlation cannot be rejected
  - this consistency condition is not met either

Consistency of best and worse performers identification

Approach	DEA-V	GLS
DEA-V		0.889
GLS	0.444	

- This would allow to discriminate the X factor among *groups* of firms in the sector
- These results imply that this condition is being met

Consistency over time

(excludes GLS since it assumes constant efficiency over time)

Approach	1 year apart	2 year apart	3 year apart	4 year apart	5 year apart
DEA-V	0.896	0.866	0.839	0.758	0.609

- Check for year-to-year stability of DEA-V efficiency estimates over time.
- The correlations are high and statistically significant over all the available lags.
  - suggesting that the efficiency scores of the DEA-V are stable over time
  - supports the assumption of no efficiency change implicit in GLS.

Comparing public and private operators

Approach	Public	Private
DEA-V	0.836	0 928

- Improved Productive efficiency = a key objective of reforms
- => expect relative efficiency of the firms under private operation to be higher than that of public firms
- The Kruskal-Wallis non-parametric test was estimated
- For the DEA-V efficiency measures, the null hypothesis of no differences between the efficiency measures of both groups (privately and publicly owned firms) can be rejected at the usual levels of significance....but...
- for the GLS case, the null hypothesis cannot be rejected.

Concluding comments

- Neutral technical change has occurred in the analyzed period (i e the frontier of the electricity distribution sector in South America has shifted outwards)
- This change was faster in private firms (average annual growth rates of 4 3%) than in public firms (2 7%)
- These results provide useful inputs for regulatory decisions but
  - with little incentive to reveal information, firms are slow in delivering what regulators want
  - imposing standardized regulatory accounting requirements would be a good start
  - garbage in → garbage out
- This is work in progress and much more remains to be done to be a real help to regulators

Plenary Session 11:
Financial Techniques – Accounting Approaches and Asset Valuation

Ian Alexander
Tuesday, September 17th 2002
SAFIR Core Course, Goa

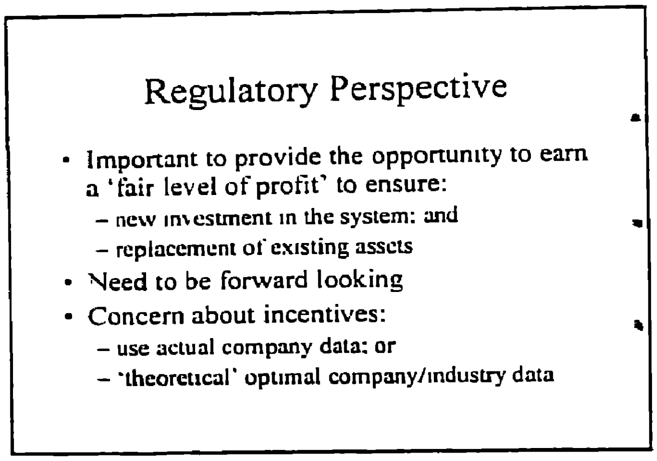
Outline

- Overview of financial issues
- Role of the regulatory asset base (RAB)
- Options for the initial RAB
- Updating the RAB
- Depreciation
- Further issues in asset valuation

Financial Issues

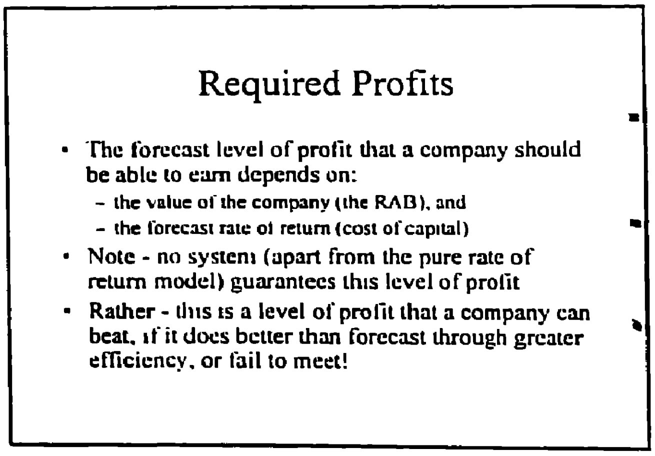
A range of financial issues must be addressed:

- an allowed level of profit, depends on:
  - the RAB; and
  - an allowed rate of return.
- given the capital intensity of infrastructure industries, depreciation is a major element of operating expenditure;
- financial viability.



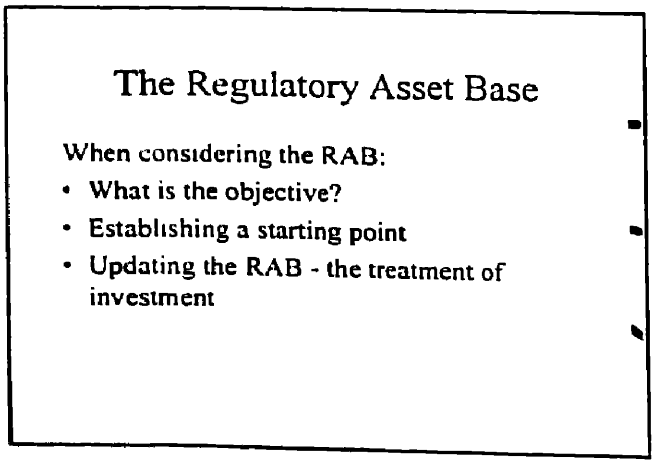
Regulatory Perspective

- Important to provide the opportunity to earn a 'fair level of profit' to ensure:
  - new investment in the system: and
  - replacement of existing assets
- Need to be forward looking
- Concern about incentives:
  - use actual company data: or
  - 'theoretical' optimal company/industry data



Required Profits

- The forecast level of profit that a company should be able to earn depends on:
  - the value of the company (the RAB), and
  - the forecast rate of return (cost of capital)
- Note - no system (apart from the pure rate of return model) guarantees this level of profit
- Rather - this is a level of profit that a company can beat, if it does better than forecast through greater efficiency, or fail to meet!



The Regulatory Asset Base

When considering the RAB:

- What is the objective?
- Establishing a starting point
- Updating the RAB - the treatment of investment

RAB: Objective

- There are several objectives that should be considered.
  - provision of certainty for investors
  - provision of incentives for investors
  - fairness - including
    - sharing benefits between investors and customers
    - continuity of initial price level for social reasons
  - provision of correct price signals for consumption, investment etc
  - interpretation of the regulatory 'contract' - in what state are assets expected to be kept?

Cost Recovery

Options for cost recovery:

- Full cost recovery - all elements of the cost are valued 'correctly'
- Partial cost recovery - some elements are valued at below cost
- Marginal or investment cost recovery - all new investment is valued 'correctly'
- A mixture of the second and third forms is often what is actually applied

RAB: Initial Starting Point

- Need to determine the value of the assets at the start of the first price control period
- To establish certainty it is better that this is done at the start of the first control period than at the end
- Options:
  - accounting value
  - 'market' value

Accounting Values

- Historic cost accounts
  - Is a fair reflection of the value paid. but issues
    - ***Long-lived assets***
    - ***High inflation***
    - ***Technology change***
- Current cost accounts (replacement value)
  - simple price index adjustment (tor RPI/CPI) or a specific price index
  - Modern Equivalent Asset (MEA)
  - Optimized MEA

Economic Values

- Reflect 'real-life' value rather than book value
- Can take several forms:
  - market price (reflected by share price and amount of net debt) - may need to be adjusted,
  - estimate of discounted cash-flow, or
  - price paid for the assets when acquired
- Reflects the fact that:
  - at initial point have only partial cost recovery
  - and captures some of the expected efficiencies for the company

Examples

- England & Wales Electricity - initial share price adjusted by 15% (for under-pricing) and then net debt is added
- England & Wales Water - average of the first 200 days share price with net debt added

RAB: Updating

- Having established a starting point, it is then important to determine how this changes to reflect:
  - general changes in the value of the existing assets (choice over definition of inflation),
  - investment in the system, and
  - the depreciation of assets
- This will allow the value of the RAB to be forecast through the life of the forthcoming price control period

Creating CAPEX Incentives

- When forecasting the RAB, have to use CAPEX forecasts (e.g *ex ante* investment)
- But, *ex post* values may differ from *ex ante*
- The value of the RAB should be updated with the *ex post* values (only if they are lower than the *ex ante*?)
- When is this reflected in the price control?
  - At the next price review (5 years); or
  - Longer (say 10 years?)

Examples of Updating

- UK regulation has adopted:

$$RAB_{t+1} = [RAB_t \times (1 + \Delta RPI_t)] + E(\text{Gross Investment}_t - \text{Depreciation}_t)$$

- But then at the next price control review resets the forecast gross investment at actual
- Only the water sector considered using 10 years rather than 5 for the CAPEX incentive, although electricity is proposing a rolling 5-year approach

Summary of the RAB

- Competing pressures help determine the starting point
- Important for certainty, fairness etc that once a starting point has been established, it is not changed
- Updating the RAB involves decisions about:
  - incentives, and
  - inflation

Depreciation

- The normal usage of assets involves a reduction in their ability to provide a service
- This 'consumption' of the assets value should be reflected in the operating costs and capital value of the company
- How should the depreciation charge be established?

Depreciation: Objectives

- Similar objectives exist to those for the RAB
- Is also a desire for equity - consumers should pay a fair cost for the assets that they are consuming
- However, since assets often have a longer life than the consumers there may be a strong inter-generational equity question

Approaches to Depreciation

- Options to consider include
  - current cost depreciation
  - historic cost depreciation,
  - depreciation of the initial RAB plus separate depreciation of new investment, and
  - an infrastructure renewals charge
- Each option effectively impacts on the allocation of depreciation charges between existing and future assets since it alters the level of assets that are presumed to be kept in perpetuity
- Further concern is about the impact of write-offs in current cost depreciation - the FCM versus OCM argument

Examples from England & Wales

- Electricity - initial RAB depreciated over 10-15 years, all new investment depreciated over 33 years. Latest proposals include a shift in new investment to being depreciated over 20 years and creates an adjustment charge to smooth the shift
- Water - underground assets have an infrastructure renewals charge, above ground are based on optimized MEA recalculated every five years
- Gas - RAB (60% of CCA value) plus current cost depreciation of new investment (system changed at the last review, traditionally full CCA)

Summary Depreciation

- Depreciation is a key charge since it allows the maintenance of the system at the existing capacity
- It raises some key inter-generational issues that must be addressed
- Consistency in rules is important since this alters the investment incentives for companies
- Examples exist of companies lengthening asset lives once the price-control has been set to boost profits

Further Issues

Some additional points to consider include:

- problems from having multiple asset values and how they should be accounted
- allocating the initial RAB
- dealing with stranded assets

Multiple Asset Values

- Does having a RAB that may be different to the depreciation base (and the 'book value' of a company) raise problems?
- No - providing there is clarity about the basis on which is calculated and the relationships between the values
- However - may be desirable to instigate a system where the additional values, such as RAB, are written into the annual accounts

Allocating an Initial RAB

- Many multi-activity companies need to allocate the RAB between different activities
- Multiple options exist:
  - equal allocation according to book value;
  - allocation based on degree of competition;
  - allocation according to the economic value; etc
- What is important is:
  - once an initial allocation has been established, it is treated consistently in the future;
  - allocations are not used to establish anti-competitive positions (say undervaluing assets in an activity that is contestable)

Stranded Assets

- Stranded assets are ones where the economic value is below the replacement value or regulatory value
- Should stranded assets
  - be allowed?
  - be compensated?
- Stranding
  - mimics the competitive market - investments get written-down/off
  - poses a risk for investors - especially if cost of capital calculations assume no stranding risk and no alternative protection is available
  - technological stranding is becoming increasingly common

Dealing with Stranded Assets

- Various approaches are available:
  - no stranding policy
  - stranding-risk adjusted allowed rate of return,
  - accelerated depreciation,
  - FCM accounting (depreciation adjustment in year of stranding)
- No solution is perfect - they have impacts on contestability, volatility of prices, incentives etc
- Need to determine which approach should be adopted - better to do this *ex ante* rather than *ex post*? (Creates investor certainty)

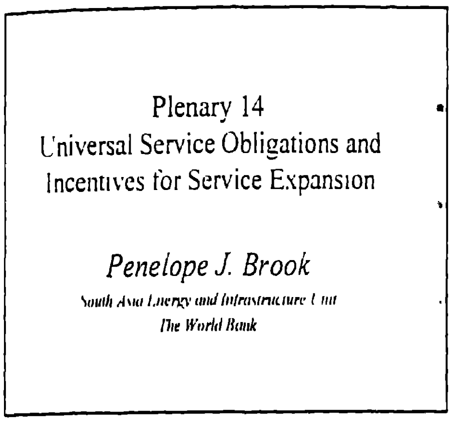
Conclusions

- Important to establish the rules as early as possible
- Once established, they should be applied consistently - changing the rules will have real incentive impacts
- A wide range of issues should be considered when establishing the rules
- No need to have a single asset value - different values for the RAB and depreciation base can be established
- Issues such as stranding have a major impact on incentives and so need to be considered carefully before being applied

Penelope J. Brook
Sector Manager, Energy
South Asia Energy and Infrastructure Unit
The World Bank
Tel 202-473-3784
Fax 202-522-2427
E-mail: pbrook@worldbank.org

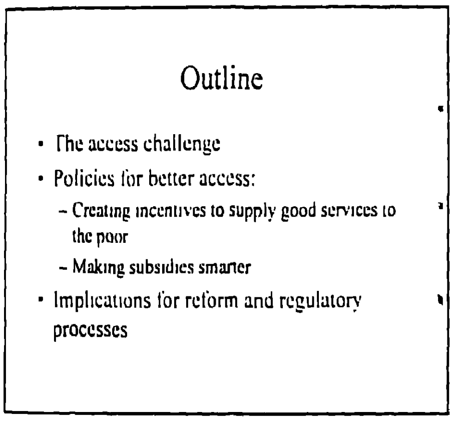
Penelope Brook is Sector Manager for Energy in the South Asia Energy and Infrastructure Unit at the World Bank. Since joining the World Bank in 1993 Penelope has been active in providing advice on the design and implementation of private sector infrastructure reforms in a wide range of countries. Her recent work has focused on designing infrastructure sector reforms to ensure improved access for low-income households, and on the design of aid instruments to link aid flows to service delivery. In this context she co-edited the *Energy and Development Report 2000: Energy Services for the World's Poor* as well as a recent book on delivering aid for infrastructure and social services, entitled *Contracting for Public Services:Output-Based Aid and Its Applications*. Penelope earlier led the preparation of the *Toolkits for Private Participation in Water and Sanitation*, published by the World Bank in 1997. Before joining the World Bank, she worked in the Investment Banking Division of CS First Boston New Zealand.

Penelope holds a masters degree in economics (first class honours) from the University of Auckland, New Zealand, and a doctorate in economics, specializing in public policy and industrial organization, from the University of Oxford.



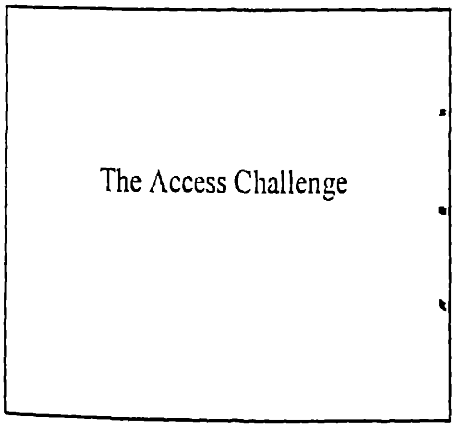
Plenary 14
Universal Service Obligations and Incentives for Service Expansion

Penelope J. Brook
South Asia Energy and Infrastructure Unit
The World Bank



Outline

- The access challenge
- Policies for better access:
  - Creating incentives to supply good services to the poor
  - Making subsidies smarter
- Implications for reform and regulatory processes

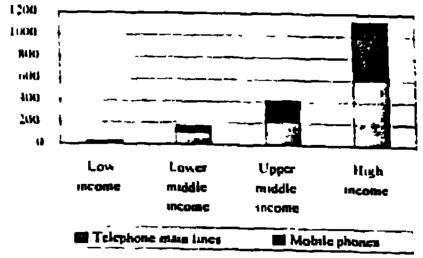


The Access Challenge

The Big Picture

- Globally, the service gap is enormous:
  e.g., 1 billion without safe water, 2 billion without safe sanitation
- Serious direct impacts for the poor, e.g.:
  - High infant mortality from diarrhoeal diseases
  - High premature deaths from indoor air pollution
- and serious indirect impacts, too, e.g.
  - Time women and girls spend fetching water, biomass reduce opportunities for education, income-earning activities

Access varies with country income – e.g. telecoms

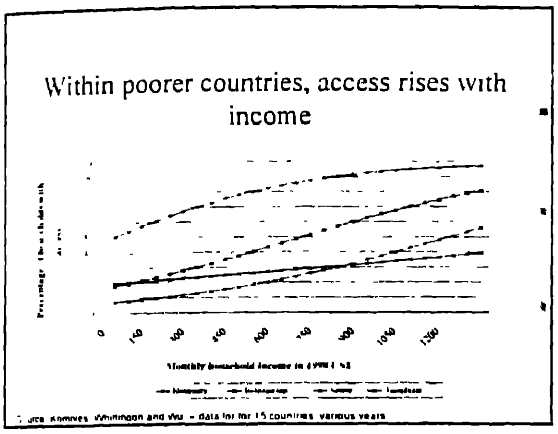


Source: ITU data for 2000

… and water and sanitation

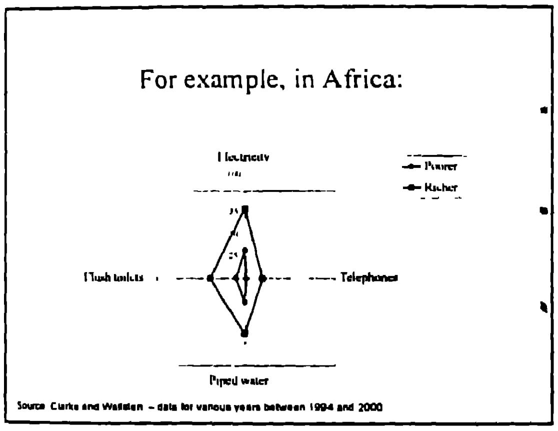
	Water (% access)	Sanitation (% access)
Low income	76	45
Lower middle income	80	52
Upper middle income	87	81
High income	100	100

World Bank Development Indicators 2002 – data for 2000



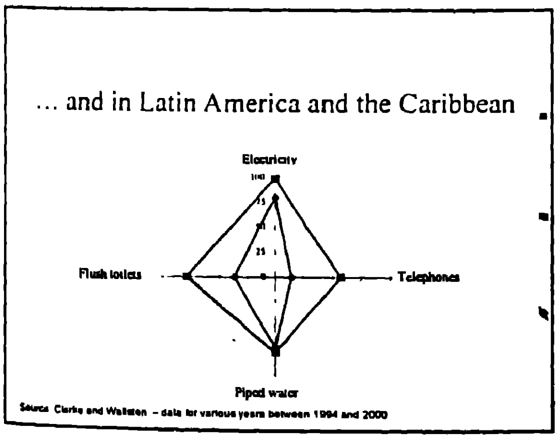
Within poorer countries, access rises with income

Source Komives, Whittington and Wu – data for for 15 countries, various years



For example, in Africa:

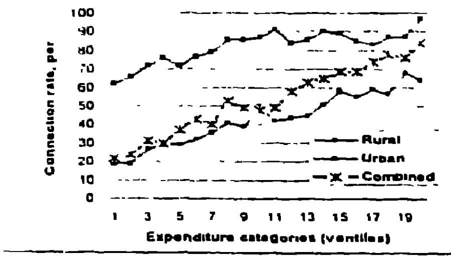
Source Clarke and Wallsten – data for various years between 1994 and 2000



… and in Latin America and the Caribbean

Source Clarke and Wallsten – data for various years between 1994 and 2000

Closer to home: the Indian power sector



Source: NSS data for 1998

Nepal and Pakistan:% of Households in Lowest Deciles with Infrastructure Service

Country	Electricity	In-house Water	Sewer	Phone
Pakistan				
Urban	88	34	20	1
Rural	44	5	0	0
Nepal				
Urban	43	7	7	0
Rural	1	4	0	0

Pakistan survey was in 1991, Nepal in 1996

Source: Komives, Whittington and Wu

Policies for Better Access

Access and Infrastructure Reform

- Proponents of reform often argue it will help the poor
  - Greater efficiency will bring down costs increasing productivity and increasing affordability
  - More resources will be mobilized to expand access
- But popular and political concerns remain.
  - Will a greater commercial orientation mean higher prices, tougher disconnection policies, more reluctance to serve unprofitable consumers?
- The evidence so far reform can help – but good design is critical

Defining the Task

- Two key problems:
  - How to improve the service options available to consumers, including the poor?
  - How to empower the poor (in particular) to take advantage of these options?

There's no single "quick fix"

- Making progress requires attention to the full range of reform levers:
  - Market structure
    - Competition and free entry vs exclusivity
    - Interconnection / bulk supply arrangements
    - Facilitating partnerships
  - Price regulation and price structure
  - Quality regulation
  - Subsidy arrangements

Market Structure

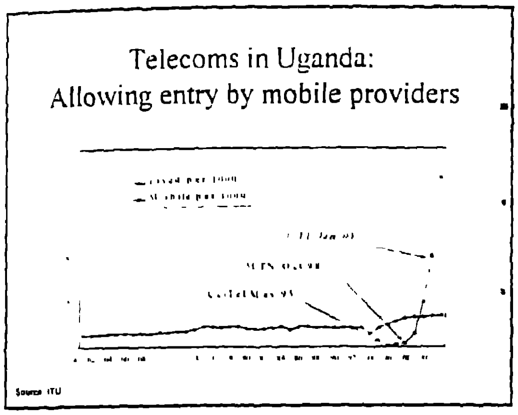
- Potential for competition and entry is constantly developing
  - technological change, e.g.
    - wireless telecommunications
    - distributed generation
  - business innovation, e.g.
    - aguateros in Paraguay
- BUT: Policy must permit innovation

Exclusivity vs. Entry?

- Early PPI schemes relied heavily on exclusivity and mandated USOs
- Common arguments
  - necessary to ensure financeability (but for *all* customers?)
  - necessary to preserve cross-subsidies (but are we sure we *want* cross subsidies?)
- Should true natural monopolies need protecting?

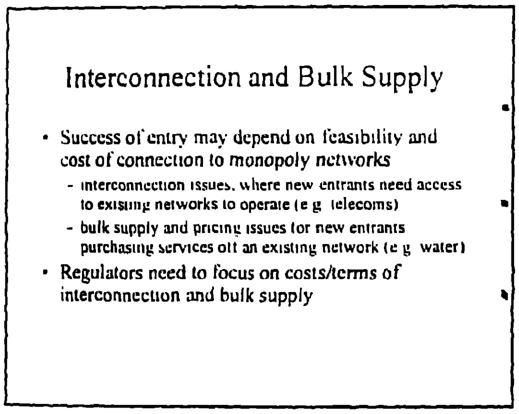
Example: Water in Paraguay

- In Paraguay, 300 to 400 private firms and individuals supply piped water to households not served by utilities
  - From small operations in a local neighborhood, to larger companies with as many as 800 connections
  - Prices broadly in line with utility prices
- Policy issue: what happens if future concessions make the *aguateros* illegal?



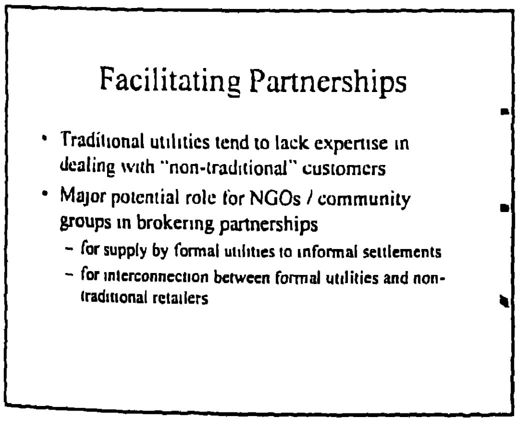
Telecoms in Uganda: Allowing entry by mobile providers

Source ITU



Interconnection and Bulk Supply

- Success of entry may depend on feasibility and cost of connection to monopoly networks
  - interconnection issues, where new entrants need access to existing networks to operate (e g telecoms)
  - bulk supply and pricing issues for new entrants purchasing services off an existing network (e g water)
- Regulators need to focus on costs/terms of interconnection and bulk supply



Facilitating Partnerships

- Traditional utilities tend to lack expertise in dealing with "non-traditional" customers
- Major potential role for NGOs / community groups in brokering partnerships
  - for supply by formal utilities to informal settlements
  - for interconnection between formal utilities and non-traditional retailers

Example: Community Partnerships for W&S Services In Manila

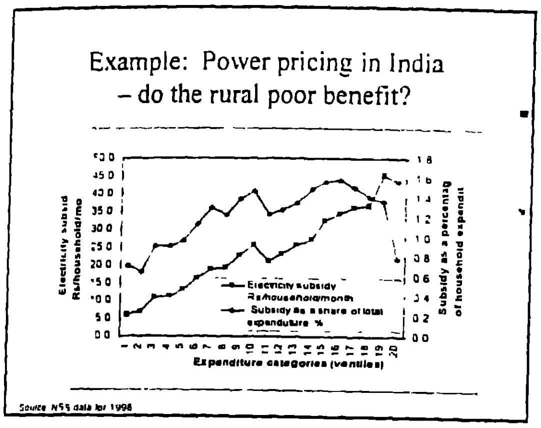
- Two concessions for W&S services let in 1997 – with targets for increased coverage
- In low income areas, a variety of innovative approaches, relying on community organization / NGO intermediation:
  - Yard connections for 2-5 households (shared bill)
  - Metered master connection for an entire low-income community
  - Individual household connections, mobilizing low-cost technology (drawn from condominial experience in Latin America)

Price Regulation and Structure

- Price levels and price structure both matter for access:
  - Without long-term prospects for cost recovery, investment in system expansion is unlikely
  - Price structures are critical in determining who gets served

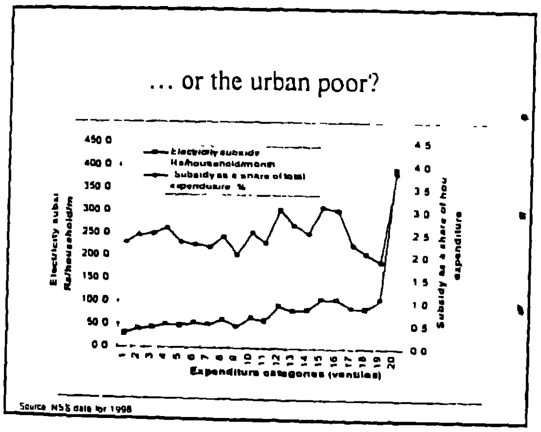
Are lifeline tariffs really a lifeline?

- Many systems rely on "social" or "lifeline" tariffs for low-consumption households
  - assumes (a) low-income households = low-consumption households, (b) low-income households have connections
- Inherent disincentive to add connections
- Unlikely to be sustainable with entry



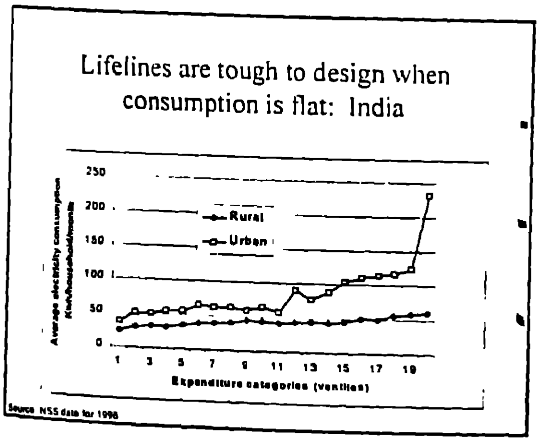
Example: Power pricing in India – do the rural poor benefit?

Source NSS data for 1998



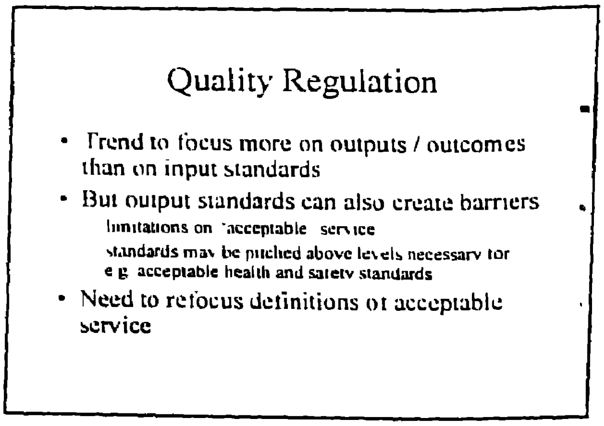
… or the urban poor?

Source NSS data for 1998



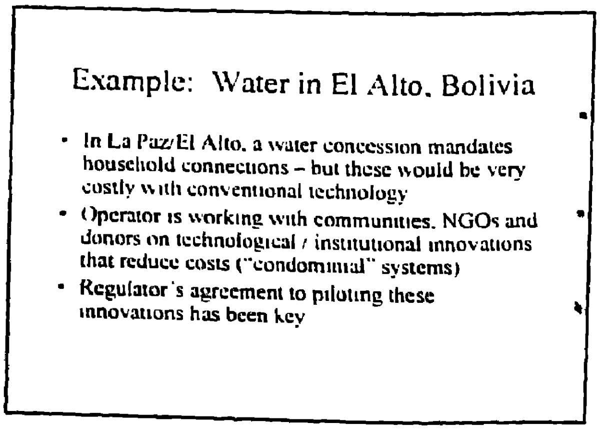
Lifelines are tough to design when consumption is flat: India

Source NSS data for 1998



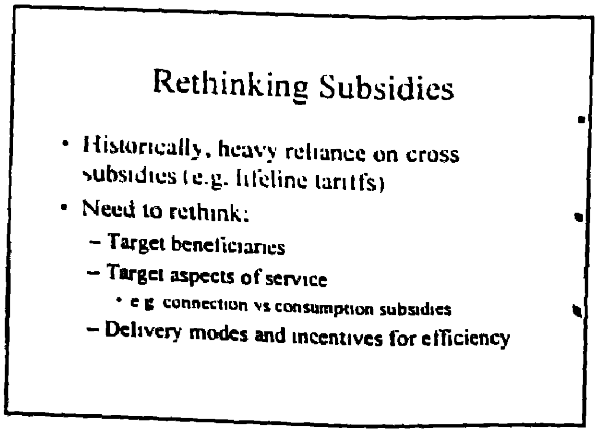
Quality Regulation

- Trend to focus more on outputs / outcomes than on input standards
- But output standards can also create barriers
    - limitations on "acceptable" service
    - standards may be pitched above levels necessary for e.g. acceptable health and safety standards
- Need to refocus definitions of acceptable service



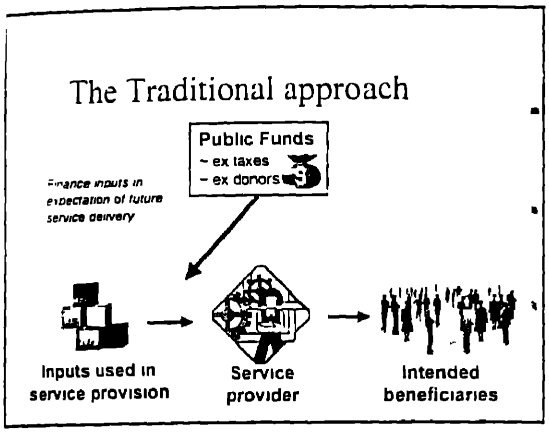
Example: Water in El Alto, Bolivia

- In La Paz/El Alto, a water concession mandates household connections – but these would be very costly with conventional technology
- Operator is working with communities, NGOs and donors on technological / institutional innovations that reduce costs ("condominial" systems)
- Regulator's agreement to piloting these innovations has been key



Rethinking Subsidies

- Historically, heavy reliance on cross subsidies (e.g. lifeline tariffs)
- Need to rethink:
    - Target beneficiaries
    - Target aspects of service
        - e.g. connection vs consumption subsidies
    - Delivery modes and incentives for efficiency



The Traditional approach

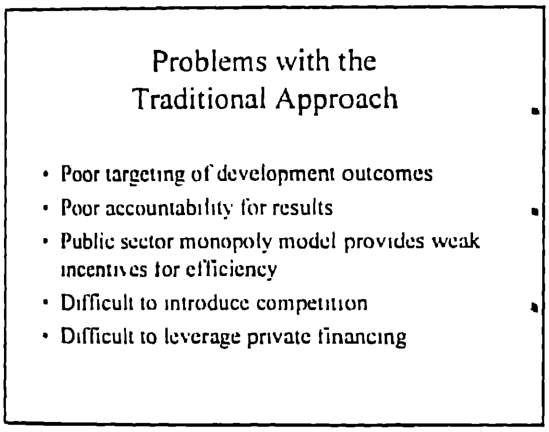
Public Funds
~ ex taxes
~ ex donors

Finance inputs in expectation of future service delivery

Inputs used in service provision

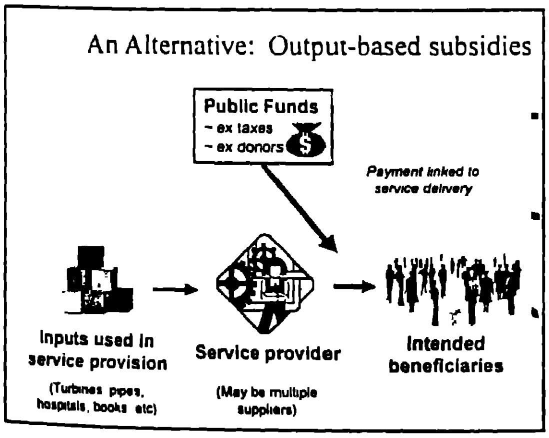
Service provider

Intended beneficiaries



Problems with the Traditional Approach

- Poor targeting of development outcomes
- Poor accountability for results
- Public sector monopoly model provides weak incentives for efficiency
- Difficult to introduce competition
- Difficult to leverage private financing



An Alternative: Output-based subsidies

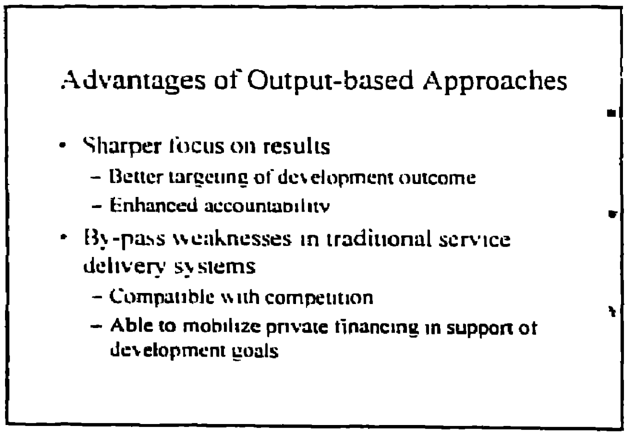
Public Funds
~ ex taxes
~ ex donors

Payment linked to service delivery

Inputs used in service provision
(Turbines pipes, hospitals, books etc)

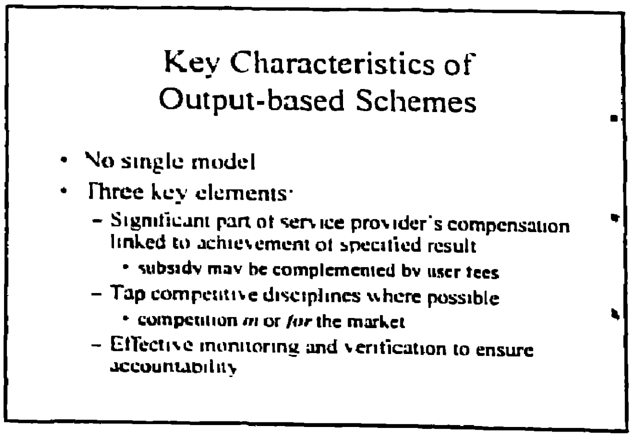
Service provider
(May be multiple suppliers)

Intended beneficiaries



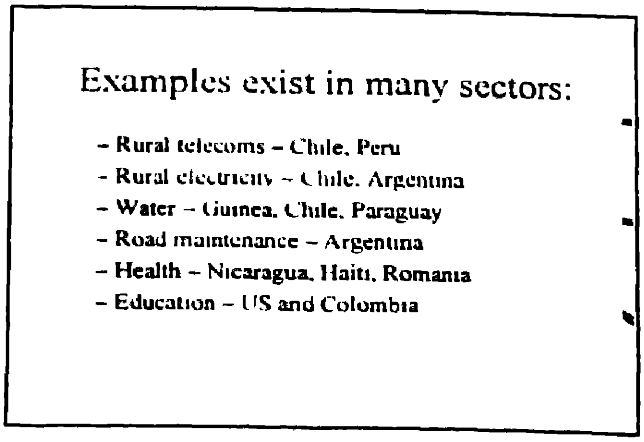
Advantages of Output-based Approaches

- Sharper focus on results
  - Better targeting of development outcome
  - Enhanced accountability
- By-pass weaknesses in traditional service delivery systems
  - Compatible with competition
  - Able to mobilize private financing in support of development goals



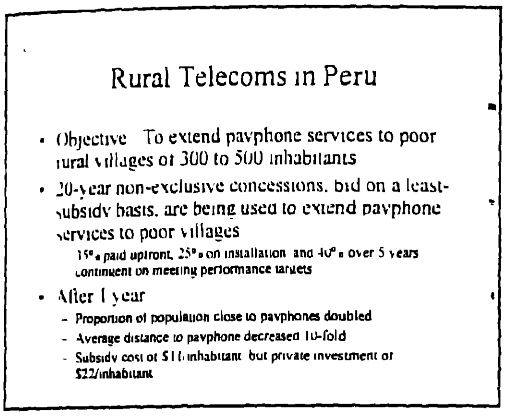
Key Characteristics of Output-based Schemes

- No single model
- Three key elements:
  - Significant part of service provider's compensation linked to achievement of specified result
    - subsidy may be complemented by user fees
  - Tap competitive disciplines where possible
    - competition *in* or *for* the market
  - Effective monitoring and verification to ensure accountability



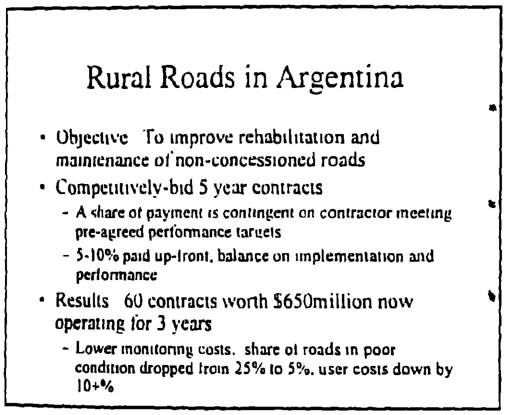
Examples exist in many sectors:

- Rural telecoms – Chile, Peru
- Rural electricity – Chile, Argentina
- Water – Guinea, Chile, Paraguay
- Road maintenance – Argentina
- Health – Nicaragua, Haiti, Romania
- Education – US and Colombia



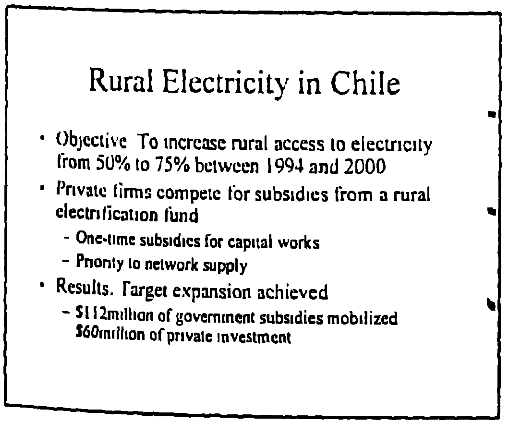
Rural Telecoms in Peru

- Objective To extend payphone services to poor rural villages of 300 to 500 inhabitants
- 20-year non-exclusive concessions, bid on a least-subsidy basis, are being used to extend payphone services to poor villages
  - 15% paid upfront, 25% on installation and 40% over 5 years contingent on meeting performance targets
- After 1 year
  - Proportion of population close to payphones doubled
  - Average distance to payphone decreased 10-fold
  - Subsidy cost of $11/inhabitant but private investment of $22/inhabitant



Rural Roads in Argentina

- Objective To improve rehabilitation and maintenance of non-concessioned roads
- Competitively-bid 5 year contracts
  - A share of payment is contingent on contractor meeting pre-agreed performance targets
  - 5-10% paid up-front, balance on implementation and performance
- Results 60 contracts worth $650million now operating for 3 years
  - Lower monitoring costs, share of roads in poor condition dropped from 25% to 5%, user costs down by 10+%



Rural Electricity in Chile

- Objective To increase rural access to electricity from 50% to 75% between 1994 and 2000
- Private firms compete for subsidies from a rural electrification fund
  - One-time subsidies for capital works
  - Priority to network supply
- Results. Target expansion achieved
  - $112million of government subsidies mobilized $60million of private investment

Implications for Reform and Regulation

In Transactions…

- More attention to:
  - market structure (potential for entry)
  - identifying potential participants / partners / interlocutors
  - understanding pattern of demand for services in unserved areas

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In Regulation…

- More focus on:
  - Monitoring of competition / consumer prices at retail level
  - Coordination of standards to facilitate interconnection
  - Pricing and terms of bulk supply
  - Pricing and terms of interconnection
  - Output quality

In Regulatory Processes…

- More focus on:
  - Facilitating participation in conventional regulatory processes
    - local advisory groups’
    - complaints mechanisms’
    - local hearings’
  - Mobilizing community involvement
    - engagement of community organizations in monitoring non-traditional suppliers’

For additional resources on expanding access and subsidy design, visit the Rapid Response Web site at

http://rru.worldbank.org

Clive Harris
Private Provision of Public Services Group
The World Bank
Tel 202-473 9587
Fax 202-522 3481
E-mail: Charris@worldbank.org
Web site http://rru.worldbank.org

Clive Harris presently works in the Private Provision of Public Services group within PSAS, where he presently focuses on the reform and regulation of the infrastructure sectors. His work includes the development of regulatory systems and capacity building initiatives for infrastructure regulators, advice on privatization and the development of regulatory frameworks for privatization transactions.

He has worked in the South Asia and Latin American regions of the World Bank.

Prior to joining the Bank, he worked in economic consulting business on power sector reform and restructuring in the UK, Australia, India, Pakistan and parts of Africa.

He holds a BA and an MPhil in Economics from the University of Oxford, UK.

Regulation and Reform – Small Scale Service Providers

Clive Harris

The World Bank

Goals of the Presentation

- Outline the role that small scale providers of infrastructure services play in developing countries
- Highlight case studies
- Discuss implications for sector reform, including privatization of network service provider, and for regulation

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Examples of small scale providers

This covers a range of service providers of different sizes:

Water water carriers and vendors, water tankers, small scale networks

Power mini-grids, household systems, small generators selling to grid

Telecoms. small scale public phone provision

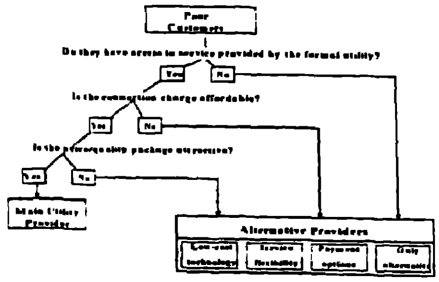
Transport private mini buses etc

Different types of organizations are involved. NGOs, for-profit businesses, 0

Why consider role of small scale providers when reforming?

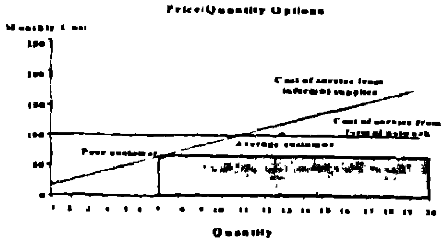
- The poor and those in rural areas often receive their services through small scale/informal providers
- Official attitudes are often either hostile or neglectful
- Many approaches to sector reform do not accommodate, or even work against, small scale providers e.g. exclusivity

Why do consumers use SSPs?



Source: Baker & Tremolet (2000)

Price/Quantity Tradeoffs: why SSPs may be more attractive for some consumers



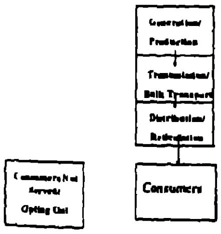
Advantages of SSPs – institutional and commercial

- Inefficient and loss-making network providers lack funds to extend services, partic to marginal areas
- Business approach of network providers may not extend well to e g squatter areas
- SSPs can offer more attractive price/quantity bundles
- SSPs can offer more flexible payment methods, including "in-kind" contributions (e g. labour in connection construction)
- Squatters may lack legal tenure, which prohibits the network providers from offering a connection

What role do SSPs play?

- Serve customers in areas where network provider is absent or where consumers prefer not to use network services
- Wheeling – use of network to provide services to consumers
- Production – e.g. electricity or water – fed into the network
- "On-sell" services of network provider and facilitation – service is delegated or retailed by SSPs

Stylized infrastructure sector structure



Generation/ Production

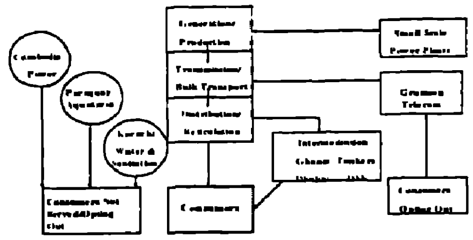
Transmission/ Bulk Transport

Distribution/ Reticulation

Consumers

Consumers Not Served/ Opting Out

How do SSPs fit in?



Small scale water networks: Paraguay's aguateros

Sector structure

- Urban public agency covers 2 0m of 2 9m
- Rural public agency covers 0 9m of 2 5m
- Peri-urban approx 400 aguateros cover 0 9m

Aguateros average 300 consumers, average systen age 10 years Use boreholes, plus disinfection, plus above ground storage, some use of meters 90% have 24 hr service Some quality monitoring.

Costs c $250/connection ($500 public agencies), tariff c $0.20-0 50/cm

Paraguay's aguateros contd.

Unprecedented expansion of privately financed piped water systems (though existence of networks not unique) due to

- Poor performance of public sector
- Availability of groundwater (not present in parts of country where this is not available) which can be accessed without great expense
- Adoption of low cost systems that allows recovery of connection costs in 3 years

Uncertainty over future regulatory framework – in particular possibility of exclusivity in future concessions

Cambodia's rural electric enterprises

- State owned EDC has system in capital Pnom Penh and through independent systems in provincial capitals totalling c 190.00 consumers. Considerable self-supply in this area due to high tariffs and poor reliability of supply
- Approx 220 privately owned rural electricity enterprises serve c 115,000 consumers. Estimated capacity of around 60MW (versus 160 MW in EDC)
- Some are licensed by provincial governments
- Large growth because of inability of incumbent to expand, and liberal entry regime

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Cambodia's rural electric enterprises

- Business characteristics: average asset value $17,633, most are sole proprietorships
- Average tariff is $0.51/kWh, service provided for 4 hours, most customers metered
- Average customer base is around 200 range is large
- 80% of those surveyed report making a profit

New regulatory framework is presently being developed which could lead to closer regulation of tariffs and QOS. Govt also interested in expanding EDC – clash between optimum technical and commercial solutions

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Karachi – Water

- Large slum population (c 3.3 million) not served by Karachi Water and Sanitation Board
- Variety of vending practices: water tankers (some fill from KWSB points), push carts etc. Approx. 5000 tankers in city; smaller vendors on-sell from tankers
- Interaction between KWSB and tankers largely informal

Karachi –Sanitation

Due to lack of sanitation, many communities have developed their own sanitation

Baldia: community on outskirts of Karachi, developed sewer system linked to nullahs. KWSB then developed trunk sewers in Baldia but did not link to the community sewers => most sewage still goes through nullahs

Highlights need for effective interaction and incorporation of different standards of works: KWSB reluctant to link to community sewers as engineering standards not good

Rural telecoms – Grameen Telecom

- Grameen Telecom (not-for-profit) re-sells air time from Grameen Phone
- Grameen Bank finances leasing of cell phones from Grameen Telecom by women who then operate them as village pay phones
- 1997-2000: reached c. 1100 villages and 2.8 mn people
- Key issue – interconnection rates: at present, BTTB keeps all revenue generated by calls from its network, GrameenPhone treated as consumer in terms of interconnection rates
- Demonstrates need for level playing field enforced by independent regulator

Small scale power plants

Exist in many countries in region – selling power into grid to incumbent operator or sometimes wheeling power

Issues:

- Other policy objectives – e.g. renewables (bagasse, micro-hydro) often important
- Role of regulator in determining access conditions and purchase prices – wider links to sector reform (competition)

Water trucking in Teshie, Ghana

- Ghana Water Co Ltd (GWCL) currently reaches 55% of consumers in Teshie Remaining reached by
  - Tankers purchasing from GWCL metered bulk supply points for tankers
  - Vendors purchasing from tankers and GWCL domestic supply points
- Tankers have to be licensed and are members of one of 3 tanker associations
- Formal relationship between GWCL and tankers has improved its finances, expanded service Associations have improved monitoring of QOS, but some concerns over ability to enforce collusion Legality makes regulation easier, however

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Dhaka: expanding water services through intermediation: DSK

- 1996 survey 20% Dhaka population living in slum and squatter settlements
- 97% do not own plot of land they reside on Public utilities do not provide service without evidence of legal title
- Dushtha Shasthya Kendra. NGO originally involved in health programs and building community organizations => emphasis on provision of water and sanitation services to poor communities

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Dhaka: expanding water services through intermediation: DSK

- DSK acts as intermediary with DWASA => organization of community for management of water points, financing (repaid by community on agreed terms), guarantor of payments for water bills Around 30 water points in operation by 1999
- Lessons:
- Need to manage impact of existing power structures within slums
- Commitment of DWASA not institutional – based on individual contacts
- Need to consider delinking right to utility services from land title
- Community mobilization critical – but can be high cost

Drawbacks of relying on SSPs

- Can be taken over by "mafia" and criminal elements
- Price-gouging
- No monitoring of quality – but in some cases
- Unlikely to adhere to safety and environmental standards
- If "on-sale" of network provider services, who is responsible for QOS and customer service?

So there are policy and regulatory concerns

Implications for sector reform

Key questions over policies on public funding/subsidies and entry provisions:

- Entry can lead to cherry-picking – may erode ability of network provider to cross-subsidize some consumers
- General subsidy fund e.g. Universal Service Fund could be developed, but needs administrative capacity to administer
- Central question which is more pro-poor competition via entry, or cross-subsidy? Need to understand where present subsidies go, who is served => need for more analysis and information than available at present

Sector reform: Service expansion through SSPs

Paraguay pilot scheme to expand service to 4 peri-urban towns by channelling funds to aguateros

- Operators bid on 10 year concession (DBO) in each
- Subsidy of US$150 per connection
- Operators bid on lowest connection cost
- Tariffs for supply fixed at local norms
- Regulation of some technical standards
- Some insurance for costs of repeated drilling for raw water sources
- 15% of subsidy paid up front
- To be funded with World Bank loan

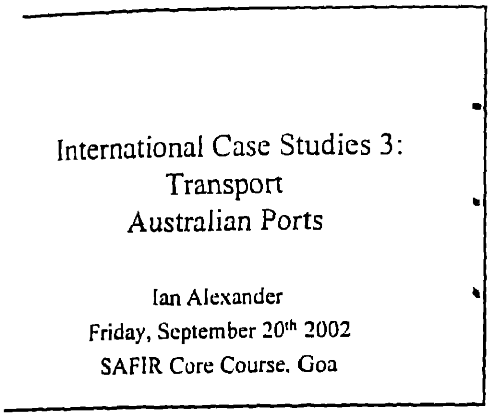
Similar pilot scheme is underway in Cambodia, again for expansion of water services

Implications for regulation

High transactions costs in regulating small providers
- benefits may not be worth costs

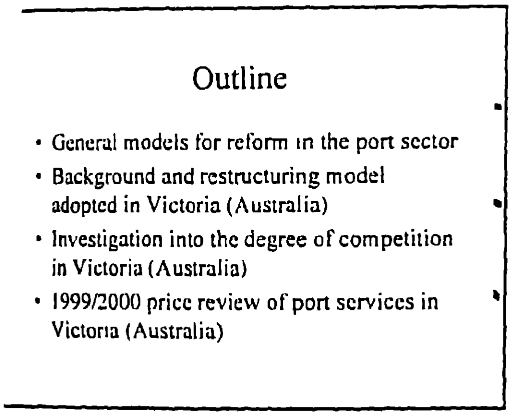
Approaches could include.

- Flexibility in quality of service rules to accommodate SSPs who provide poor with QOS they want
- Focus on interconnection with network provider
- Light-handed approach => don't raise costs of doing business
- Consider pros and cons of self-regulation (but can enforce cartels), setting standards and encouraging monitoring by independent bodies e.g. NGOs



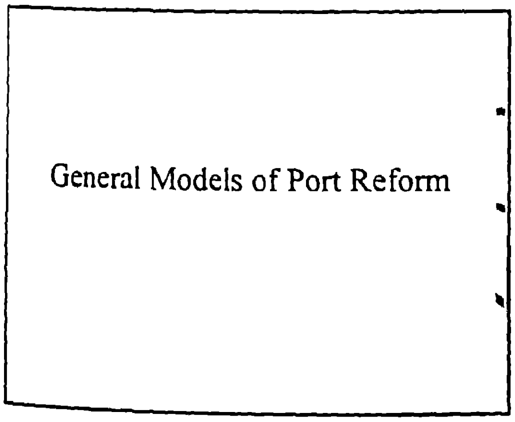
International Case Studies 3: Transport Australian Ports

Ian Alexander
Friday, September 20th 2002
SAFIR Core Course, Goa



Outline

- General models for reform in the port sector
- Background and restructuring model adopted in Victoria (Australia)
- Investigation into the degree of competition in Victoria (Australia)
- 1999/2000 price review of port services in Victoria (Australia)



General Models of Port Reform

Models

Three basic models

Model	*Infrastructure*	*Superstructure & Equipment*	*Services*
Landlord	Port Authority	Private	Private
Tool	Port Authority	Port Authority	Private
Service	Port Authority	Port Authority	Port Authority

Private Participation in Ports

- 112 projects with a total investment of 1998 $9,283m undertaken in developing countries over the period 1990-98 (World Bank data)
- Concessions (Trujillo and Nombela, 2000)

Port	**Concession length (years)**
Buenos Aires	**18-25**
Mar del Plata	**15**
Karachi	**20**
Manila South Harbour	**25**
Maputo	**15**

Victoria (Australia): Ports

Background

1995 reform program
- privatization and corporatization;
- separation of ports and channel operations;
- transfer of regulatory powers from the port authorities to other bodies; and
- regulation of prices where insufficient competition exists

The port 'landlord' model has been adopted

Relative size

Port	A$m regulated revenue 1998/9	% of total revenue
Melbourne	80+	<50
VCA	20+	
Portland	>5	81
Geelong	10+	
Hastings	<5	>50

Ownership (1)

Melbourne
- corporatized with some services privatized

Portland
- privatized and owned by Infratil (a major utility and infrastructure investment company in Australia and New Zealand)

Ownership (2)

Geelong

- is owned by a joint venture between
  - Toll and
  - Infrastructure Investment Corporation (a consortium of financiers)
- Assets of the port are leased, on a 99-year basis, to GeelongPort Pty Ltd Toll GeelongPort, a subsidiary of Toll, operates the Port

Hastings

- management and operation of the port was privatized - it is now operated under a 10-year management contract (with two five-year renewal options)
- the contract was awarded to Toll Transport Pty Ltd, trading as Toll Westernport

Victorian Port Structural Review 1999

Structural Review

- In conjunction with the ongoing price review, a structural review has been initiated to determine if there is an industry structure that will allow the operation of the ports without price controls
- 4 key issues have been identified
  - structural separation of access channels and land-based port facilities
  - common control and management of ports
  - promotion of contestability and efficiency in container stevedoring
  - strategic role of port authorities in promoting the efficient delivery of port services and growth of throughput

Access Channels

- As a pro-competitive action, access channels had been separated from land-based activities (VCA was set-up)
  - may have had a positive impact on competition for land-based activities (VCA estimates savings at A$56m from 1996 to June 1999 and a further A$22.9m by June 2000)
  - BUT may have been anti-competitive with respect to the provision of channel services (since a common charging regime is applied) and introduced another level of bureaucracy
- Separation may have distorted incentives for investment to augment existing channels and discouraged efficient integration of channel and land-based services (the ports pay for the investment but the VCA receives higher tonnage fees) and increased costs

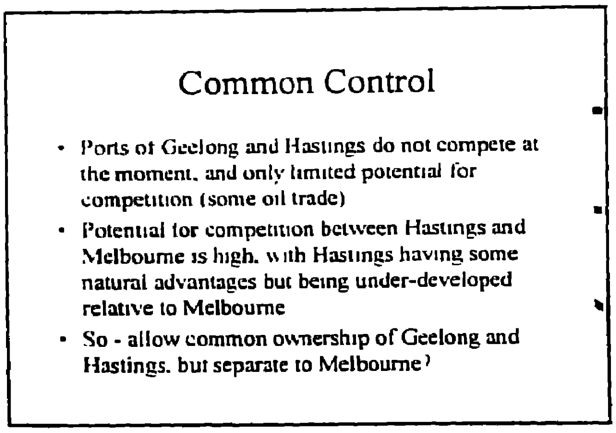
Options for Channel Ownership

Options are.

- channel ownership remains with the Government
- development and maintenance of channels used exclusively for access to the port of Melbourne be made the responsibility of the MPC under a long-term licence or lease arrangement (similarly for Geelong)
- the south and west channels that provide access to both ports be placed under the control of MPC
- an effective access regime covering all access channels be established to ensure non-discriminatory access
- need to consider options for harbour traffic movements

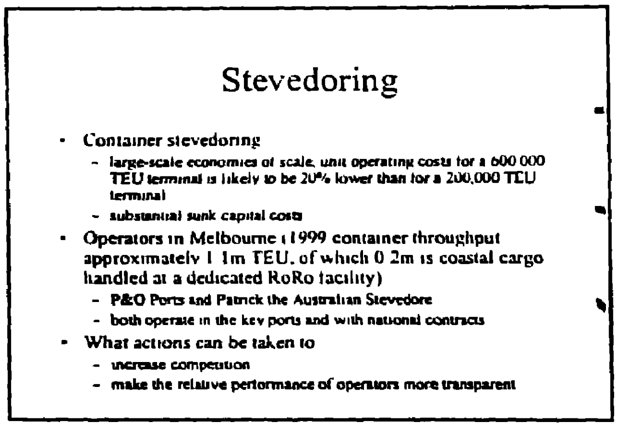
Constraints/Issues to consider

- When determining the appropriate response it is important to consider the likely development of competition through.
  - establishment of new ports, and/or
  - the break-up of existing ports into competing operators
- More research and consultation is planned before a decision is taken
- Harbour traffic management services are an important constraint, significant economies of scale are said to exist



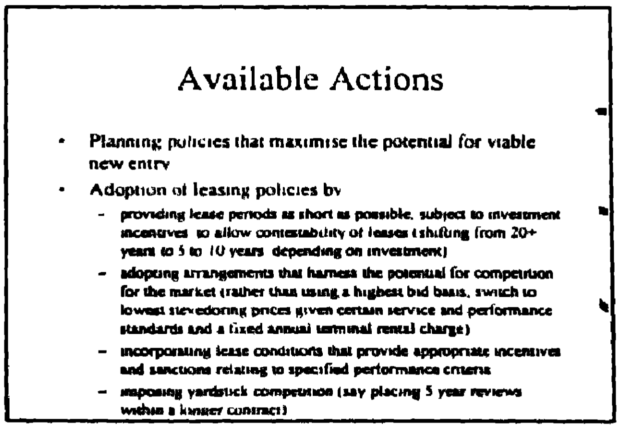
Common Control

- Ports of Geelong and Hastings do not compete at the moment, and only limited potential for competition (some oil trade)
- Potential for competition between Hastings and Melbourne is high, with Hastings having some natural advantages but being under-developed relative to Melbourne
- So - allow common ownership of Geelong and Hastings, but separate to Melbourne?



Stevedoring

- Container stevedoring
  - large-scale economies of scale, unit operating costs for a 600 000 TEU terminal is likely to be 20% lower than for a 200,000 TEU terminal
  - substantial sunk capital costs
- Operators in Melbourne (1999 container throughput approximately 1.1m TEU, of which 0.2m is coastal cargo handled at a dedicated RoRo facility)
  - P&O Ports and Patrick the Australian Stevedore
  - both operate in the key ports and with national contracts
- What actions can be taken to
  - increase competition
  - make the relative performance of operators more transparent



Available Actions

- Planning policies that maximise the potential for viable new entry
- Adoption of leasing policies by
  - providing lease periods as short as possible, subject to investment incentives to allow contestability of leases (shifting from 20+ years to 5 to 10 years depending on investment)
  - adopting arrangements that harness the potential for competition for the market (rather than using a highest bid basis, switch to lowest stevedoring prices given certain service and performance standards and a fixed annual terminal rental charge)
  - incorporating lease conditions that provide appropriate incentives and sanctions relating to specified performance criteria
  - imposing yardstick competition (say placing 5 year reviews within a longer contract)

Strategic Role of Port Corporation

- Corporatisation and financial discipline are seen as requisites
- BUT - the Government also wants to maximise the net economic benefit from the provision of all port facilities and activities
- There is no conflict in a competitive market . .
- Price regulation may not be enough in a non-competitive environment

Possible Solutions

- Redefine the role of the port corporation as a strategic manager rather than a profit maximising landlord
- This is an issue that relates to the three earlier points
- Need also to consider the dynamic impacts of the proposed solutions - the allocation of risk and incentives between the various players

Conclusions on Structure

- These activities go beyond the simple regulatory and responsibilities of the Office of the Regulator General (ORG) and require policy and commercial actions
- Key to efficiency is market structure

Victorian Port Competition Review 1999

Specific Background

- Port Services Act, 1995, required the Office of the Regulator General (ORG) to undertake an Inquiry into the need for price regulation in the Victorian Ports by January 1st 2000. If regulation is required, proposals for the form and detail of the control were also to be proposed
- ORG started its review in September 1999 and completed in December 1999
- Australian Port charges account for about 1.5% of the landed value of products, meaning that the ability to over-price may be high given the small proportion of total costs covered

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Prescribed (Regulated) Services

Under the 1995 Act, these services were prescribed

- provision of channels for use by shipping,
- making available berths buoys or dolphins in connection with the berthing of vessels,
- provision of short-term storage or marshalling facilities,
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- towage in all ports except Melbourne, and
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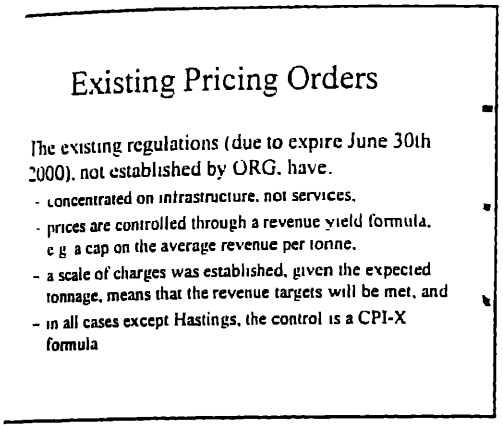

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The existing regulations (due to expire June 30th 2000), not established by ORG, have:

- concentrated on infrastructure, not services,
- prices are controlled through a revenue yield formula, e g a cap on the average revenue per tonne,
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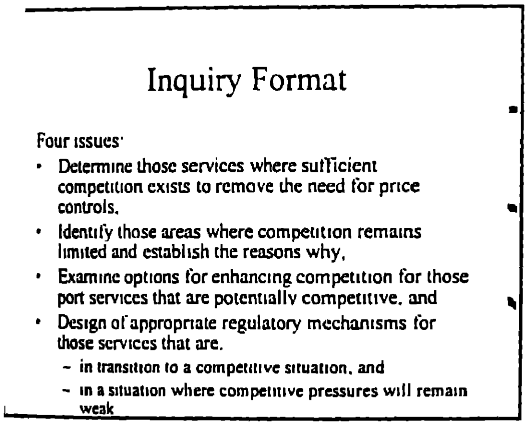
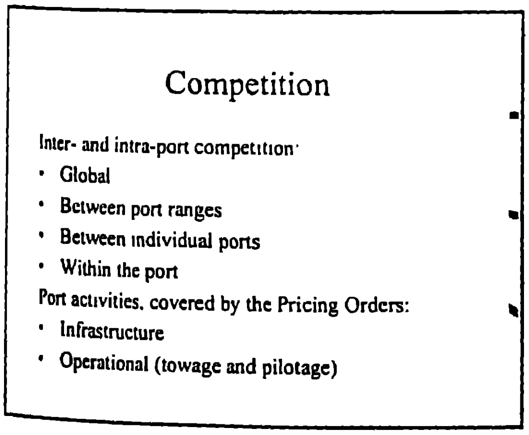


Inquiry Format

Four issues:

- Determine those services where sufficient competition exists to remove the need for price controls,
- Identify those areas where competition remains limited and establish the reasons why,
- Examine options for enhancing competition for those port services that are potentially competitive, and
- Design of appropriate regulatory mechanisms for those services that are:
  - in transition to a competitive situation, and
  - in a situation where competitive pressures will remain weak



Competition

Inter- and intra-port competition:

- Global
- Between port ranges
- Between individual ports
- Within the port

Port activities, covered by the Pricing Orders:

- Infrastructure
- Operational (towage and pilotage)

Forms of Competition

Four forms of competition:

- in the market (head-to-head);
- contestability;
- for the market (franchising); and
- comparative (benchmarking, yardstick etc)

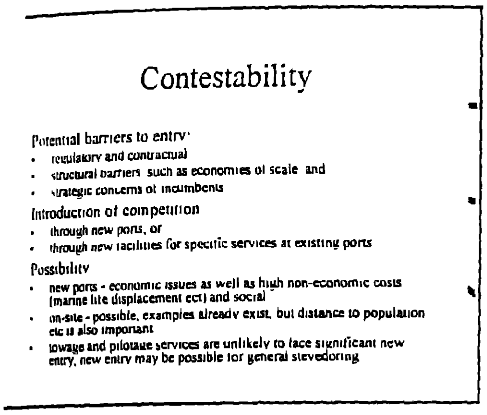
Determining the Existence of Competition

Review concentrated on:

- intensity of competition between existing companies
- contestability (impact of possible new entrants)
- existence of close substitutes
- ability of customers to provide effective countervailing pressures
- impact of key input suppliers

Intensity of Competition

- Few port operators in Victoria, with very limited inter-port competition (VicGrain-Geelong is only real example)
- Land transport costs dominate - although rail freight reforms biting
- Competition
  - for marginal grain shipments - high fixed costs so pressure to maximize shipments
  - periodic competition - when contracts are renewed
- Some cases where this is not the case
  - inputs to aluminium smelters located at the port, and
  - import and export trades for the Shell refinery at Geelong
- Asymmetrical competition - PMC competes to take trade from smaller ports but not *vice-versa*
- Services limited to a single company at each port towage (driven by peak demand requirements) and pilotage (safety and asymmetry)

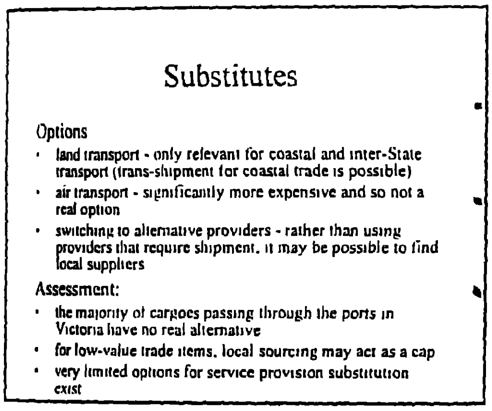


Contestability

Potential barriers to entry:
- regulatory and contractual
- structural barriers such as economies of scale and
- strategic concerns of incumbents

Introduction of competition
- through new ports, or
- through new facilities for specific services at existing ports

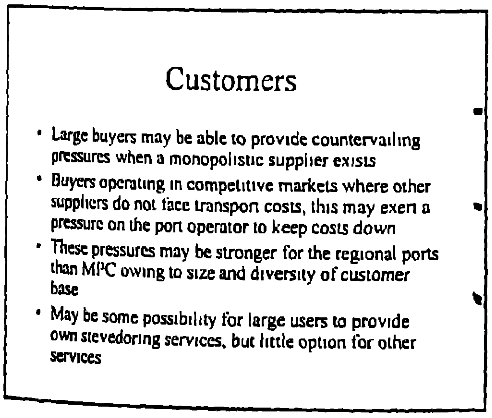
Possibility
- new ports - economic issues as well as high non-economic costs (marine life displacement ect) and social
- on-site - possible, examples already exist, but distance to population etc is also important
- towage and pilotage services are unlikely to face significant new entry, new entry may be possible for general stevedoring



Substitutes

Options
- land transport - only relevant for coastal and inter-State transport (trans-shipment for coastal trade is possible)
- air transport - significantly more expensive and so not a real option
- switching to alternative providers - rather than using providers that require shipment, it may be possible to find local suppliers

Assessment:
- the majority of cargoes passing through the ports in Victoria have no real alternative
- for low-value trade items, local sourcing may act as a cap
- very limited options for service provision substitution exist



Customers

- Large buyers may be able to provide countervailing pressures when a monopolistic supplier exists
- Buyers operating in competitive markets where other suppliers do not face transport costs, this may exert a pressure on the port operator to keep costs down
- These pressures may be stronger for the regional ports than MPC owing to size and diversity of customer base
- May be some possibility for large users to provide own stevedoring services, but little option for other services

Input Suppliers

- While input supplier power may limit excess profits, can also cause inefficiencies
- Two areas where input suppliers may exercise power
  - waterfront labour, and
  - suppliers of capital (especially the role of the Government)
- Forces are working to ameliorate these issues, especially the latter - through the proposed price regime

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Conclusions on Effective Competition

Further evidence

- Some evidence, such as two of the smaller ports achieving less revenue than forecast (owing to competitive forces pushing down prices) suggests that some effective competition is underway
- Employee levels are dropping
- Port Corporations are introducing novel marketing etc , actions needed under a competitive environment

Decision:

- Regulation of infrastructure services is needed, although it can be less intrusive for the regional ports
- Pilotage and Towing should be included in the price controls
- Stevedoring is subject to ACCC control and so no further controls needed

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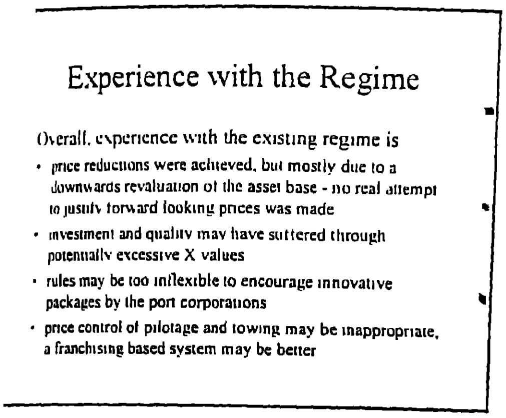
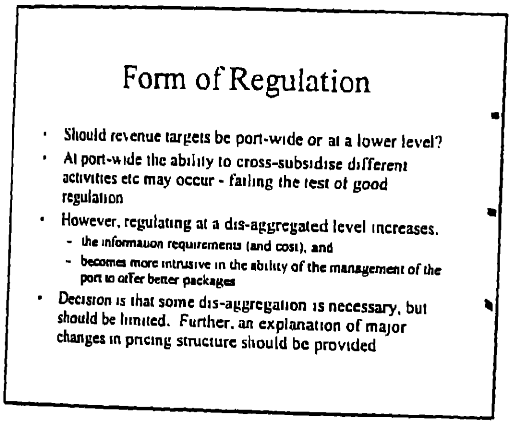
Victorian Port Competition 1999-2000 Price Review



Experience with the Regime

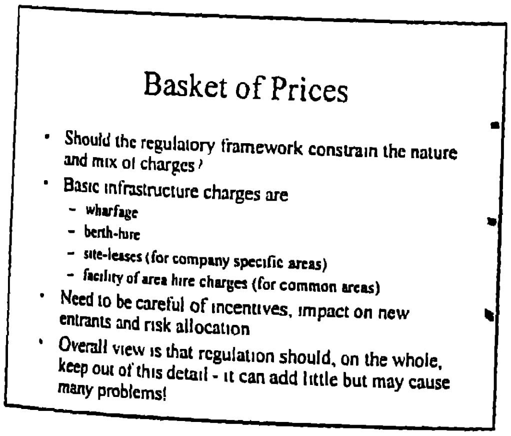
Overall, experience with the existing regime is

- price reductions were achieved, but mostly due to a downwards revaluation of the asset base - no real attempt to justify forward looking prices was made
- investment and quality may have suffered through potentially excessive X values
- rules may be too inflexible to encourage innovative packages by the port corporations
- price control of pilotage and towing may be inappropriate, a franchising based system may be better



Form of Regulation

- Should revenue targets be port-wide or at a lower level?
- At port-wide the ability to cross-subsidise different activities etc may occur - failing the test of good regulation
- However, regulating at a dis-aggregated level increases,
  - the information requirements (and cost), and
  - becomes more intrusive in the ability of the management of the port to offer better packages
- Decision is that some dis-aggregation is necessary, but should be limited. Further, an explanation of major changes in pricing structure should be provided



Basket of Prices

- Should the regulatory framework constrain the nature and mix of charges?
- Basic infrastructure charges are
  - wharfage
  - berth-hire
  - site-leases (for company specific areas)
  - facility of area hire charges (for common areas)
- Need to be careful of incentives, impact on new entrants and risk allocation
- Overall view is that regulation should, on the whole, keep out of this detail - it can add little but may cause many problems!

Form and Scope of Future Control

- Existing control is a maximum average revenue per unit of cargo - so every extra unit of cargo over the forecast number can increase revenue by the average per unit allowance
- A CPI-X system is applied for annual changes
- ORG considers CPI-X appropriate for the future
- Various options within this. it was determined that a tariff basket approach would remove many of the problems that had been encountered
- Revenue requirements should include lease payments (exempted in the first control) if used in the delivery of a prescribed service

Proposals on Form and Scope

MPC and VCA

- Decided to use a building-block approach. establishing required revenues over the period 2001 to 2005 and then establishing an X
- Shift to a tariff basket away from the existing MWAR system

Regional Ports

- Rather than just adopt a 'regulate when charges change' or the role of an arbitrator when negotiations between port and company. it was decided to take the role of establishing reference tariffs

Key Inputs

- Since a detailed bottom-up approach was not adopted for the first price-control, it is necessary to address the following questions carefully
  - asset valuation,
  - cost of capital,
  - operating expenditure,
  - growth forecasts, and
  - unregulated income

Valuation of Capital Base - MPC

- Standard approach adopted by ORG is that the value of the assets should not exceed the DORC (depreciated. optimised replacement cost)
- When MPC was established the assets were revalued. so book values can be used for MPC
- This will set the initial value. Then the ORG believes that a rolling-forward basis is appropriate
- Final decision - use DORC but investigate further the value that would have been found through rolling forward the 1996 DORC asset value

Valuation of Asset Base - VCA

- Main asset of VCA is the channels that it controls
- Channels have an infinite life if maintained. so unusual assets
- At transfer these were valued at zero
- Other assets should be valued at DORC, while existing channels are valued at zero and new investment in channels should be amortized over a long, but finite, life

Appropriate Rate of Return

- ORG is clear than the appropriate approach is a WACC utilising the CAPM for equity
- But concerns about how tax should be treated
- Proposed using a post-tax figure and the including actual tax as a revenue item
- One company suggested that the WACC should be 7 15% (based on a set of assumptions including an asset beta of 0 75)

Allowed Rate of Return

[redacted]

[redacted]

Differences in Estimates

- Focus on post-tax since tax modelled as a benchmark figure
- Some differences arise because of:
  - differences in the time when calculations were undertaken (movements in the risk-free rate)
  - higher gearing ratios; and
  - lower debt premia

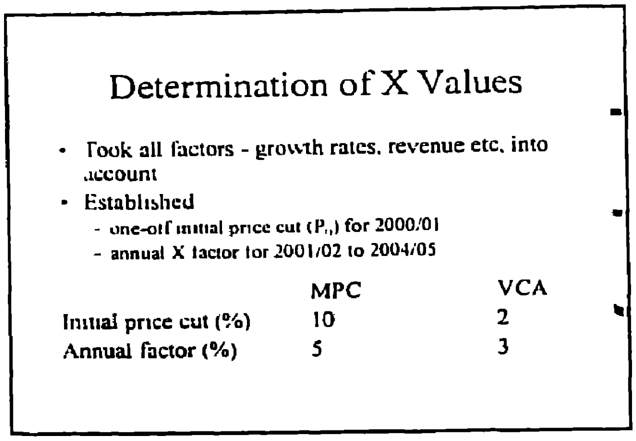
Operating Costs and Efficiency

- Operating costs built on company proposals
- Each also proposed efficiency savings:
  - MPC - 1% per annum
  - VCA - built into numbers and not openly stated
- ORG accepted these figures

Trade Forecasts

Revenue Requirement - MPC

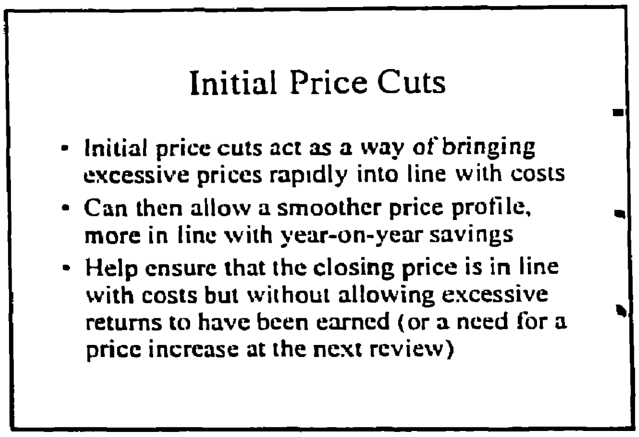
Revenue Requirement - VCA



Determination of X Values

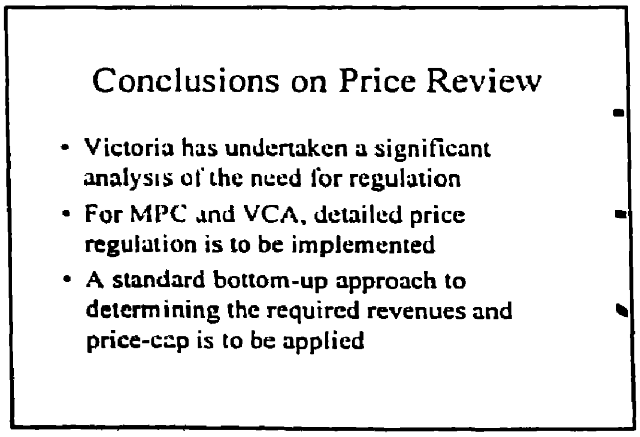
- Took all factors - growth rates, revenue etc. into account
- Established
  - one-off initial price cut (P_0) for 2000/01
  - annual X factor for 2001/02 to 2004/05

	MPC	VCA
Initial price cut (%)	10	2
Annual factor (%)	5	3



Initial Price Cuts

- Initial price cuts act as a way of bringing excessive prices rapidly into line with costs
- Can then allow a smoother price profile, more in line with year-on-year savings
- Help ensure that the closing price is in line with costs but without allowing excessive returns to have been earned (or a need for a price increase at the next review)



Conclusions on Price Review

- Victoria has undertaken a significant analysis of the need for regulation
- For MPC and VCA, detailed price regulation is to be implemented
- A standard bottom-up approach to determining the required revenues and price-cap is to be applied

Sources

- *Application of revenue yield control to Victorian Ports* Sohail Hasnie Transition to a liberalized environment experiences and issues in regulation, TERI, 1999
- *Beyond Price Regulation Market Structure, Competition and Efficiency in Victoria's Ports*, Working Paper, ORG, December 17th 1999
- *Review of Port Services Price Regulation* Draft Report, ORG, November 1999
- *Victorian Ports Price Review: Melbourne Port Corporation & Victorian Channels Authority*, Draft Decision, ORG, May 4th 2000

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Decision.

- Regulation of infrastructure services is needed, although it can be less intrusive for the regional ports
- Pilotage and Towing should be included in the price controls
- Stevedoring is subject to ACCC control and so no further controls needed

Implications

- The approach adopted is a good format for considering the effectiveness of competition in any industry
- Any regulator, when thinking about price regulation should start with the question of 'Is regulation needed?'
- Applying this sort of analysis will then help determine where regulation may be needed

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Victorian Port Competition 1999-2000 Price Review

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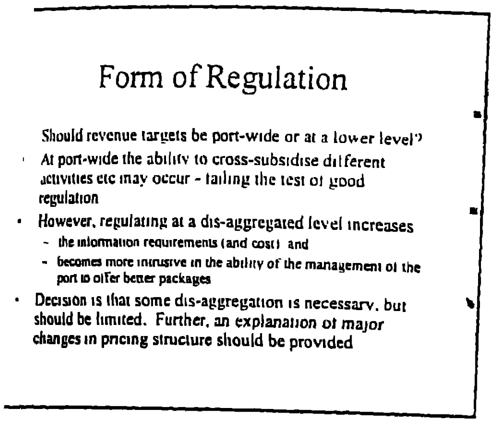

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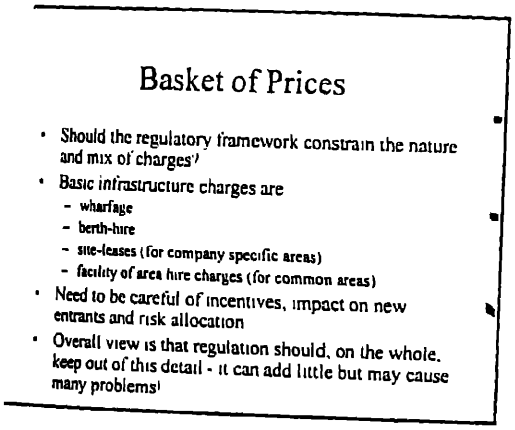
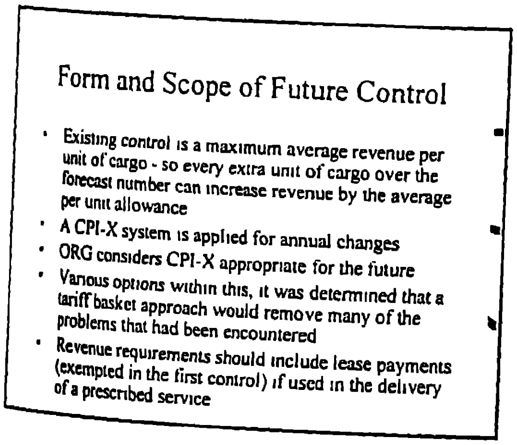
  - the information requirements (and cost) and
  - becomes more intrusive in the ability of the management of the port to offer better packages
- Decision is that some dis-aggregation is necessary, but should be limited. Further, an explanation of major changes in pricing structure should be provided



Basket of Prices

- Should the regulatory framework constrain the nature and mix of charges?
- Basic infrastructure charges are
  - wharfage
  - berth-hire
  - site-leases (for company specific areas)
  - facility of area hire charges (for common areas)
- Need to be careful of incentives, impact on new entrants and risk allocation
- Overall view is that regulation should, on the whole, keep out of this detail - it can add little but may cause many problems!



Form and Scope of Future Control

- Existing control is a maximum average revenue per unit of cargo - so every extra unit of cargo over the forecast number can increase revenue by the average per unit allowance
- A CPI-X system is applied for annual changes
- ORG considers CPI-X appropriate for the future
- Various options within this, it was determined that a tariff basket approach would remove many of the problems that had been encountered
- Revenue requirements should include lease payments (exempted in the first control) if used in the delivery of a prescribed service

Proposals on Form and Scope

MPC and VCA

- Decided to use a building-block approach, establishing required revenues over the period 2001 to 2005 and then establishing an X
- Shift to a tariff basket away from the existing MWAR system

Regional Ports

- Rather than just adopt a 'regulate when charges change' or the role of an arbitrator when negotiations between port and company, it was decided to take the role of establishing reference tariffs

Key Inputs

- Since a detailed bottom-up approach was not adopted for the first price-control, it is necessary to address the following questions carefully:
  - asset valuation,
  - cost of capital,
  - operating expenditure,
  - growth forecasts, and
  - unregulated income

Valuation of Capital Base - MPC

- Standard approach adopted by ORG is that the value of the assets should not exceed the DORC (depreciated, optimised replacement cost)
- When MPC was established the assets were revalued, so book values can be used for MPC
- This will set the initial value. Then the ORG believes that a rolling-forward basis is appropriate
- Final decision - use DORC but investigate further the value that would have been found through rolling forward the 1996 DORC asset value

Appropriate Rate of Return

- ORG is clear than the appropriate approach is a WACC utilising the CAPM for equity
- But concerns about how tax should be treated
- Proposed using a post-tax figure and the including actual tax as a revenue item
- One company suggested that the WACC should be 7.15% (based on a set of assumptions including an asset beta of 0.75)

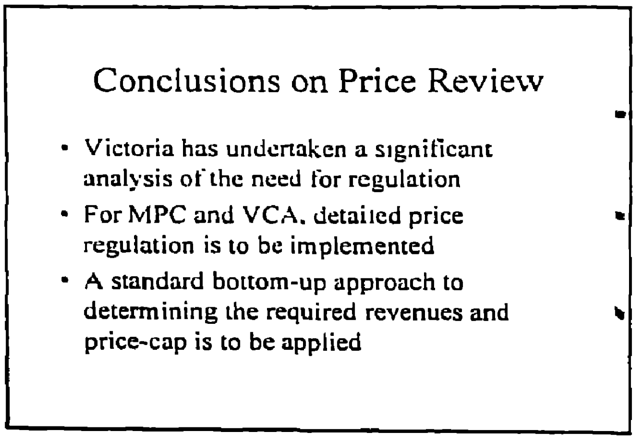
Operating Costs and Efficiency

- Operating costs built on company proposals
- Each also proposed efficiency savings:
  - MPC - 1% per annum
  - VCA - built into numbers and not openly stated
- ORG accepted these figures
- Forecasts of growth in trade are important when translating efficiency factors into X values

Determination of X Values

- Took all factors - growth rates, revenue etc, into account
- Established:
  - one-off initial price cut (P_0) for 2000/01
  - annual X factor for 2001/02 to 2004/05

	MPC	VCA
Initial price cut (%)	10	2
Annual factor (%)	5	3



Conclusions on Price Review

- Victoria has undertaken a significant analysis of the need for regulation
- For MPC and VCA, detailed price regulation is to be implemented
- A standard bottom-up approach to determining the required revenues and price-cap is to be applied

S P Gon Chaudhuri
Director
West Bengal Renewable Energy Development Agency
Kolkata
E-mail: wbreda@cal.vsnl.net.in

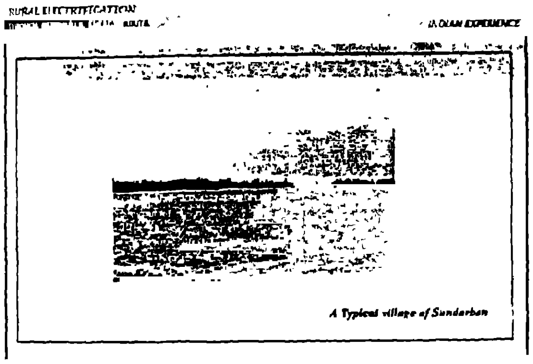
Dr Gon Chaudhuri is now working as a Director, West Bengal Renewable Energy Development Agency. Besides, he is also associated as Adviser, Govt of Tripura; Director, West Bengal Rural Electrification Corp; Member, Working Group on Remote Village Electrification, Planning Commission.

He has been working in the field of renewable energy for last 20 years. Dr Gon Chaudhuri has implemented a large number of projects in the field of renewable energy throughout the country and abroad particularly in the eastern and north eastern part of our country, Bangladesh, Pacific Islands etc. he also visited throughout the world as a resource person in the field of renewable energy. He did Electrical Engineering and is an Energy Specialist. FIE

Dr Gon Choudhury is also a recipient of PVSEC Award, National Science Academy Award, Surya Award and CBIP Award. He has published a large number of papers on Off grid Electrification with grid quality power.

RURAL ELECTRIFICATION
THROUGH RENEWABLE ENERGY ROUTE
INDIAN EXPERIENCE

S.P. GON CHOUDHURI
DIRECTOR, WBREDA
CALCUTTA, INDIA



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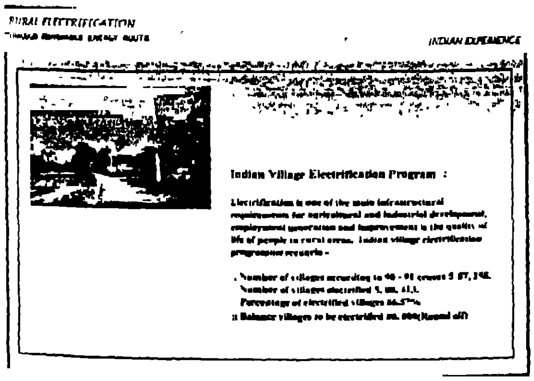
INDIAN EXPERIENCE

A Typical village of Sundarban



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INDIAN EXPERIENCE

Indian Village Electrification Program :

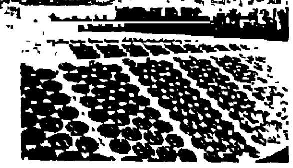
Electrification is one of the main infrastructural requirements for agricultural and industrial development, employment generation and improvement in the quality of life of people in rural areas. Indian village electrification programme scenario -

- Number of villages according to 90 - 91 census 5 87, [illegible]
  Number of villages electrified 5, [illegible]
  Percentage of electrified villages 86.57%
- ii Balance villages to be electrified 80, 000(Round off)

RURAL ELECTRIFICATION
THROUGH RENEWABLE ENERGY ROUTE — INDIAN EXPERIENCE

Sagar Island of West Bengal is 2nd largest island of the country next to Andaman with a population of 1.60 lacs. and 46 villages. All the villages fall under 18,000 categories. However, 11 villages of 46 have been declared as electrified due to availability of grid quality power from Solar Power Plants.

RURAL ELECTRIFICATION
THROUGH RENEWABLE ENERGY ROUTE — INDIAN EXPERIENCE

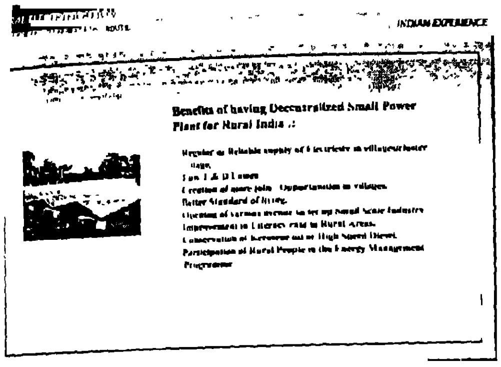


At present there are nine Solar PV Power Plant (stand alone) in Sagar Island with an aggregate capacity of 300 kW

RURAL ELECTRIFICATION
THROUGH RENEWABLE ENERGY ROUTE — INDIAN EXPERIENCE

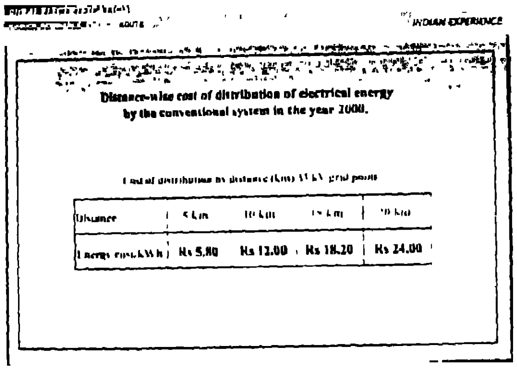
Salient Technical Features of a Typical Solar PV Power Plant Installed in Sagar Island

[illegible]	[illegible] kW for the domestic and commercial [illegible] and [illegible] kW for drinking water supply [illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	1700 sq. ft. area
[illegible]	3 Phase [illegible] PVC [illegible] Length [illegible] km.
[illegible]	[illegible] PVC Cable
[illegible]	3 H.P. (Centrifugal)
[illegible]	Up to 200 watts Up to [illegible] watts 5 H.P. Drinking Water Pump



Benefits of having Decentralized Small Power Plant for Rural India :

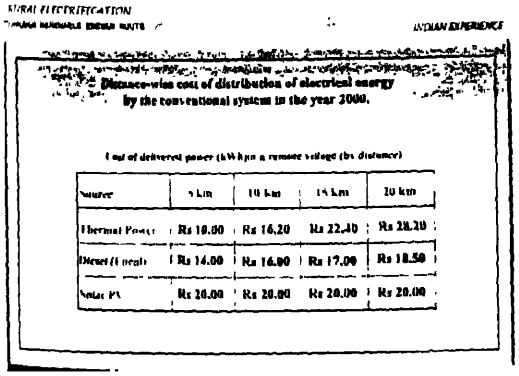
- Regular & Reliable supply of Electricity in village/cluster stage.
- Low T & D Losses
- Creation of more Jobs Opportunities in villages.
- Better Standard of living.
- Opening of various avenue to set up Small Scale Industry
- Improvement in Literacy rate in Rural Areas.
- Conservation of Kerosene oil or High Speed Diesel.
- Participation of Rural People in the Energy Management Programme



Distance-wise cost of distribution of electrical energy by the conventional system in the year 2000.

Cost of distribution by distance (Km) 33 kV grid points

Distance	5 km	10 km	15 km	20 km
Energy cost/kWh	Rs 5.80	Rs 12.00	Rs 18.20	Rs 24.00



Distance-wise cost of distribution of electrical energy by the conventional system in the year 2000.

Cost of delivered power (kWh) in a remote village (by distance)

Source	5 km	10 km	15 km	20 km
Thermal Power	Rs 10.00	Rs 16.20	Rs 22.40	Rs 28.20
Diesel (Local)	Rs 14.00	Rs 16.00	Rs 17.00	Rs 18.50
Solar PV	Rs 20.00	Rs 20.00	Rs 20.00	Rs 20.00

Frequency distribution of sample house holds by type of benefits derived for getting power from SPV Power Plant.

Percentage of households with SPV connection

Type of Benefits	Name of Villages			
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	67	80	28	30
[illegible]	30	31	85	50
[illegible]	32	29	5	15
[illegible]	17	48	22	53

Institutional Arrangements and financial Mechanisms of the programme ::

Each of the [illegible] grids has a 25-28.5kW (peak) PV array each costing over 10 million rupee of which 6 million rupee consist of subsidy from MNES, Govt. of India and State Govt. and about 4 million rupee was a loan from the World Bank credit line through IREDA.

WBREDA procured all plants and machineries centrally and installed the same along with distribution lines.

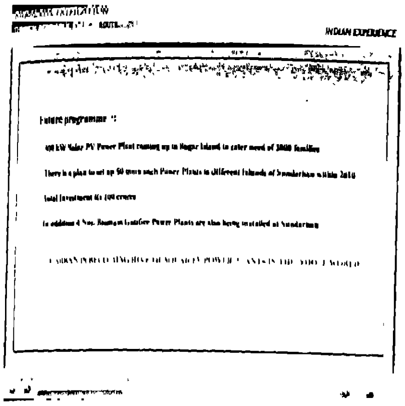
A Cooperative society Sagardweep Rural Energy Development Cooperative Society Ltd. (SREDCSL) was set up in the year 1994 which is responsible for collection of the electricity service fee and sorting out of local problems.

The SREDCSL passes on the revenue to WBREDA for servicing of Loan and for replacement of Batteries in future

---

Category of Consumer

A	70 watts connected load	Upfront fees Rs 500.00 Monthly charge Rs 75.00
B	120 watts connected load	Upfront fees Rs 1000.00 Monthly charge Rs 150.00
C	Higher connected load in 120 watts slab.	



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Future programme :

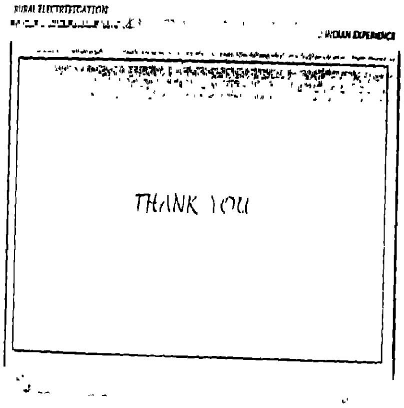
400 kW Solar PV Power Plant coming up in Sagar Island to cater need of 2000 families

There is a plan to set up 50 more such Power Plants in different Islands of Sundarban within 2010

Total Investment Rs 100 crores

In addition 4 Nos. Biomass Gasifier Power Plants are also being installed at Sundarban

[illegible]



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THANK YOU

International Case Study on Regulation and Restructuring Organization of Power Pools

Martin Rodriguez Pardina

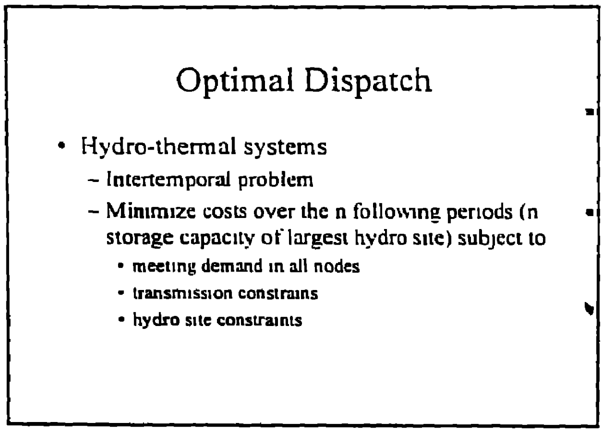
September 2002

Wholesale Contracts

- Optimal Dispatch
- Wholesale Market Price
- Bulk Power Contracts
- Contracts and dispatch

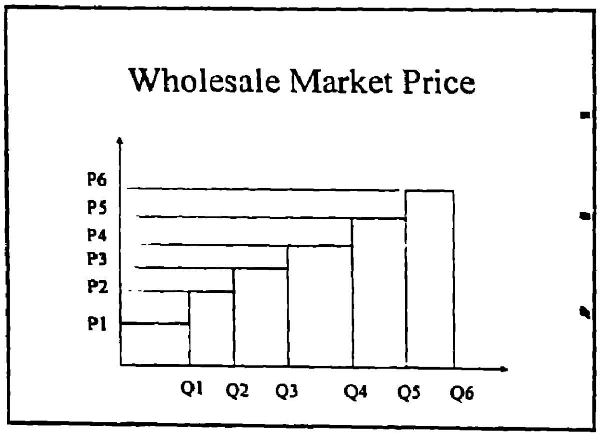
Optimal Dispatch

- Thermal systems
  - One period problem
  - Minimize costs over the following period subject to
    - meeting demand in all nodes
    - generation capacity
    - transmission constrains

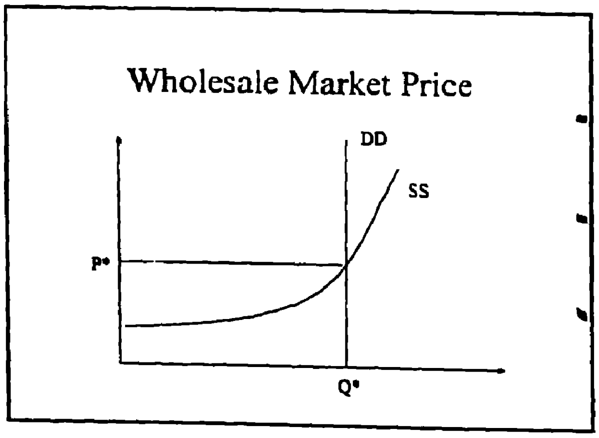


Optimal Dispatch

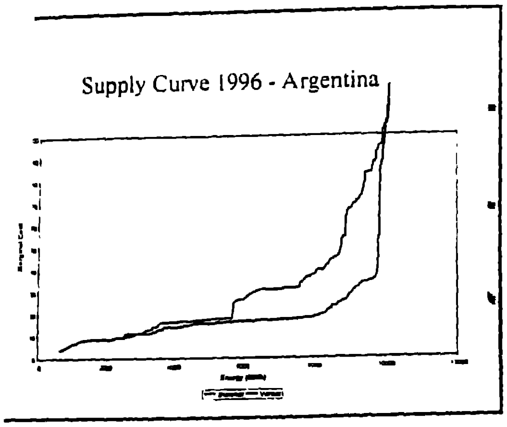
- Hydro-thermal systems
  - Intertemporal problem
  - Minimize costs over the n following periods (n storage capacity of largest hydro site) subject to
    - meeting demand in all nodes
    - transmission constrains
    - hydro site constraints



Wholesale Market Price



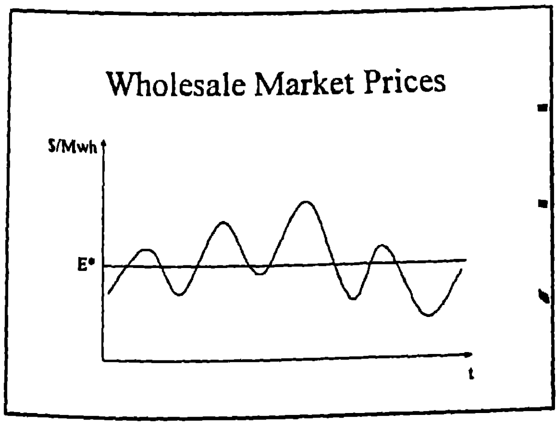
Wholesale Market Price



Supply Curve 1996 - Argentina

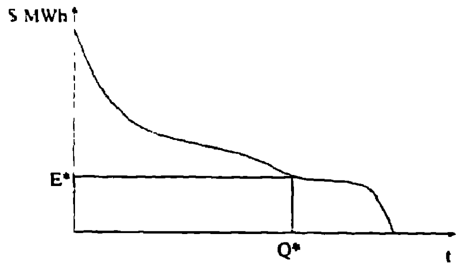
Bulk Power Contracts

- Risks to be allocated
  - Price Risk
  - Quantity Risk
  - Fuel Price Risk
  - Availability Risk

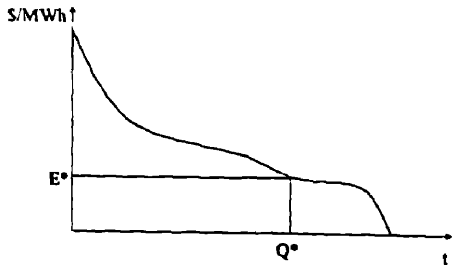


Wholesale Market Prices

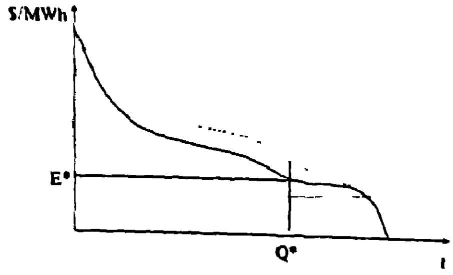
Market Price Duration Curve

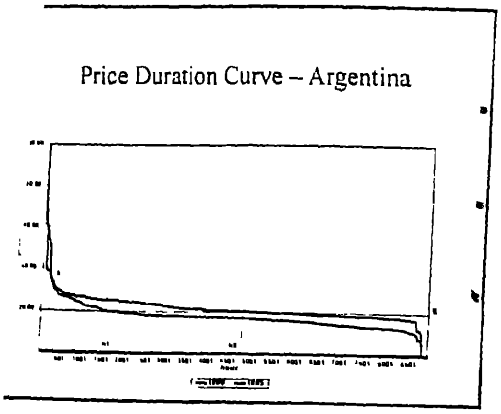


Price Risk

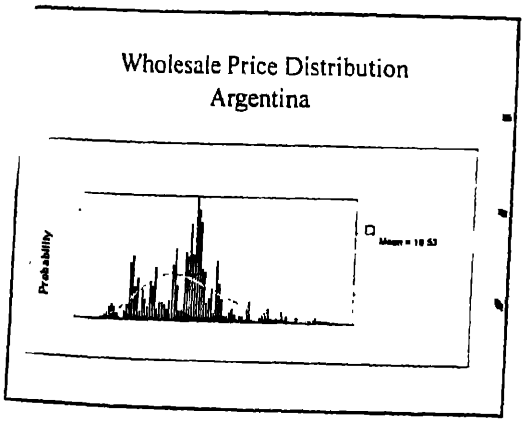


Quantity Risk

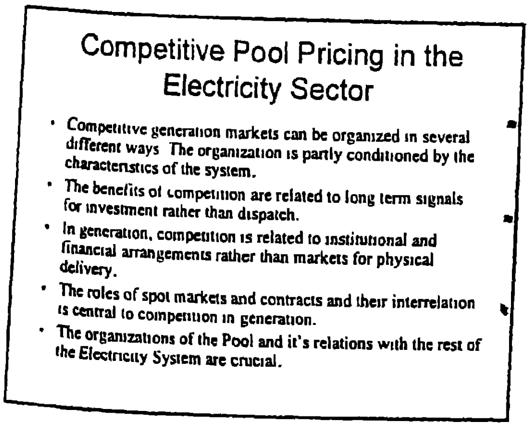




Price Duration Curve – Argentina



Wholesale Price Distribution Argentina



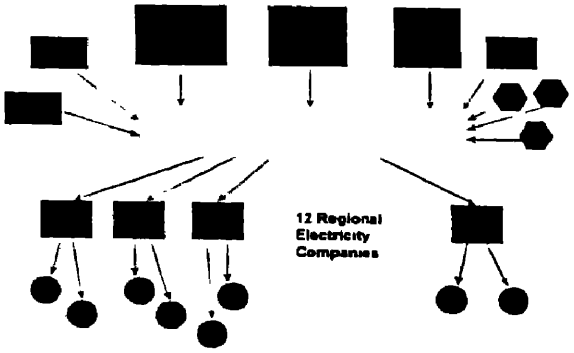
Competitive Pool Pricing in the Electricity Sector

- Competitive generation markets can be organized in several different ways The organization is partly conditioned by the characteristics of the system.
- The benefits of competition are related to long term signals for investment rather than dispatch.
- In generation, competition is related to institutional and financial arrangements rather than markets for physical delivery.
- The roles of spot markets and contracts and their interrelation is central to competition in generation.
- The organizations of the Pool and it's relations with the rest of the Electricity System are crucial.

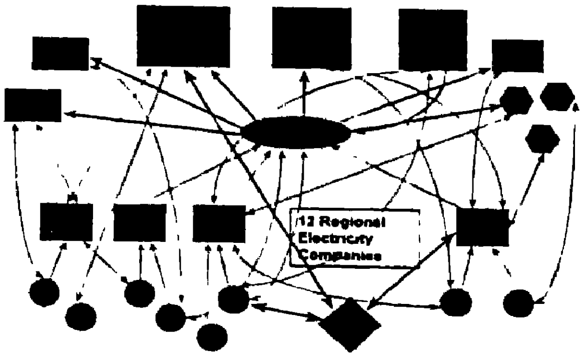
Topics

- Competition in Generation
- Energy and financial flows
- Three pool examples
- Pool taxonomies
- Institutional arrangements

Energy Flows in the British System



Financial Flows in the British System



Institutional Models and Generation Markets

• Model I Monopoly	• No market
• Model II Purchasing agency	• Monopsony
• Model III Wholesale competition	• Competitive (few participants)
• Model IV: Retail competition	• Competitive (many participants)

Spot Markets

- Centralized dispatch system
  - The UK Pool
- Decentralized Contracts Market
  - The New Electricity Trading Arrangements (NETA)

The England and Wales Pool

- A day in advance of trading, generators submit price bids and availability for each genset for each half hour during the following day
- An Unconstrained Schedule (U-S) is produced which minimizes the cost of meeting forecast demand
- The bid of the last genset in the U-S is the "System Marginal Price" (SMP)

The England and Wales Pool

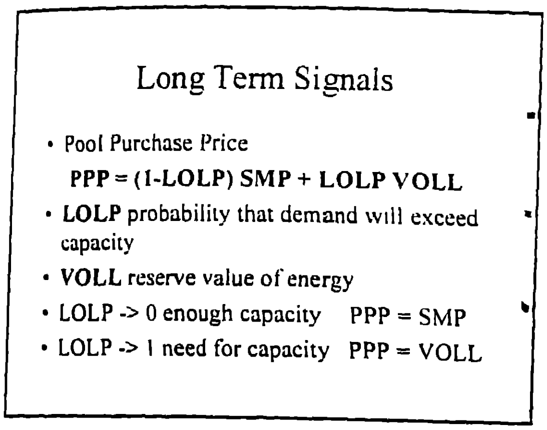
- Pool Purchase Price (PPP) is given by the SMP plus Value of Loss Load times Loss of Load Probability **(PPP=(1-LOLP)xSMP+LOLPxVOLL)**
- Genset capacity not needed is paid an availability bonus
- The Dispatch instructs all generators as to when and how much to generate

The England and Wales Pool

- Transmission constraints
  - Generators in the U-S not dispatched for transmission constrains (constrained-off) are paid lost profit (PPP-Own Bid)
  - Generators not in the U-S needed to generate due to transmission constrains (constrained-on) are paid their Own Bid

The England and Wales Pool

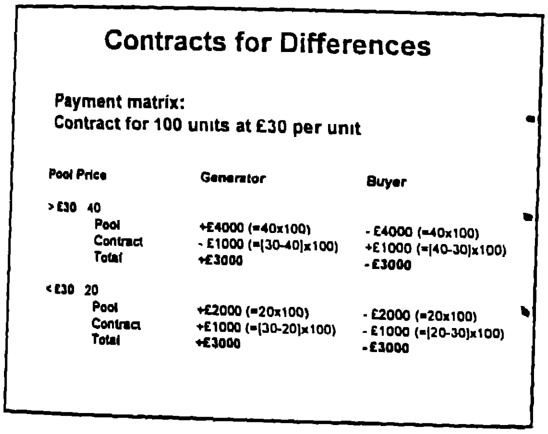
- Pool Selling Price (PSP) is given by the PPP plus cost of constrained on and constrained off generation plus ancillary services (known as Uplift)
- For each energy unit consumed during each half hour users pay the PSP



Long Term Signals

- Pool Purchase Price

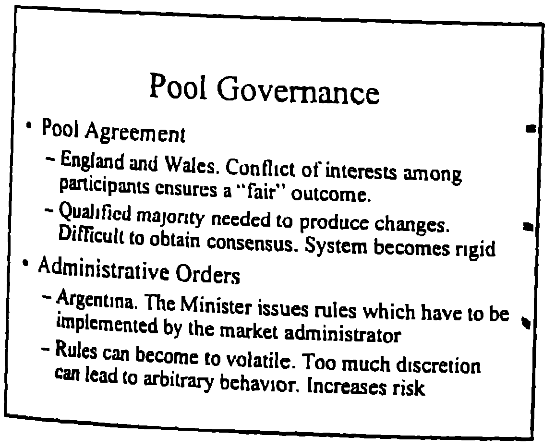
  PPP = (1-LOLP) SMP + LOLP VOLL
- **LOLP** probability that demand will exceed capacity
- **VOLL** reserve value of energy
- LOLP -> 0 enough capacity PPP = SMP
- LOLP -> 1 need for capacity PPP = VOLL



Contracts for Differences

Payment matrix:
Contract for 100 units at £30 per unit

Pool Price	Generator	Buyer
>£30 40		
Pool	+£4000 (=40x100)	- £4000 (=40x100)
Contract	- £1000 (=[30-40]x100)	+£1000 (=[40-30]x100)
Total	+£3000	- £3000
<£30 20		
Pool	+£2000 (=20x100)	- £2000 (=20x100)
Contract	+£1000 (=[30-20]x100)	- £1000 (=[20-30]x100)
Total	+£3000	- £3000



Pool Governance

- Pool Agreement
  - England and Wales. Conflict of interests among participants ensures a "fair" outcome.
  - Qualified majority needed to produce changes. Difficult to obtain consensus. System becomes rigid
- Administrative Orders
  - Argentina. The Minister issues rules which have to be implemented by the market administrator
  - Rules can become to volatile. Too much discretion can lead to arbitrary behavior. Increases risk

NETA: Reasons for Reform

- Review of the Pool arrangements carried out in 1998. PROs:
  - The balancing arrangements have maintained the quality and security of supplies
  - The trading and pricing arrangements have assisted new generators in entering the market and have allowed competition in supply to be introduced.

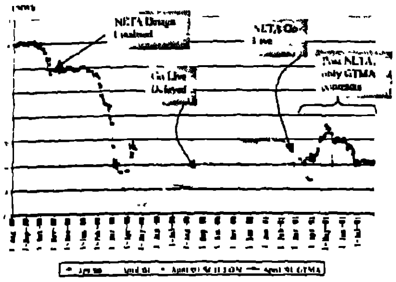
NETA: Reasons for Reform

- Review of the Pool arrangements carried out in 1998. CONs:
  - Bids into the Pool by generators are not reflective of costs
  - Market power has been a factor in maintaining or increasing Pool prices. Pool trading arrangements have facilitated the exercise of market power at the expense of customers
  - Pool governance arrangements are inflexible and have precluded change or delayed reform

NETA: Basic Principles

- Those wishing to buy and sell electricity should be able to enter into any freely negotiated contracts to do so.
- Bulk electricity will be traded on one or more exchanges and through a variety of bilateral and multilateral contracts
- Participants are likely to include not only generators and suppliers(who produce or consume physical quantities of electrical energy), but non-physical traders as well.

Prices during the Change



NETA Structure

- Forwards and futures markets, which evolve in response to the requirements of participants, that will allow contracts for electricity to be struck up to several years ahead;
- Short-term power exchanges, also evolving in response to the requirements of participants, to give participants the opportunity to 'fine tune' their contract positions in a simple and accessible way;

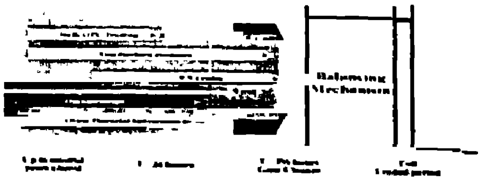
NETA Structure

- A Balancing Mechanism in which NGC, as System Operator, accepts offers of and bids for electricity to enable it to balance the system; and
- A Settlement Process for charging participants whose contracted positions do not match their metered volumes of electricity, for the settlement of accepted Balancing Mechanism offers and bids, and for recovering the System Operator's costs of balancing the system.

NETA Elements

- forwards and futures markets
  - that allow contracts for electricity to be struck over timescales ranging from several years ahead to on-the-day markets
- a Balancing Mechanism
  - by which the National Grid Company (NGC), the operator of the transmission system accepts offers and bids for electricity close to real time to enable it to balance supply and demand and
- an Imbalance Settlement process
  - for making payments to and from those whose contracted positions do not match their actual metered electricity production or consumption and for clearing certain other costs of balancing the system

Traded Markets under NETA



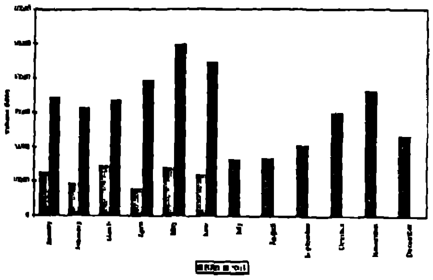
Contracts Markets

- Over the Counter (OTC) markets
  - Bilaterally traded long term (from months to years ahead of trading)
- Power Exchanges
  - Trading in short term markets (from day ahead to gate closure)
  - UK Power Exchange (UKPX) UK Automated Power Exchange (UKAPX) and International Petroleum Exchange (IPE)

OTC Markets

- Sharp increase in trading since start of NETA (2000 vs 2001)
  - Volume increased by 315%
  - # contracts traded increased by 289%
  - # different contracts increased by 517%

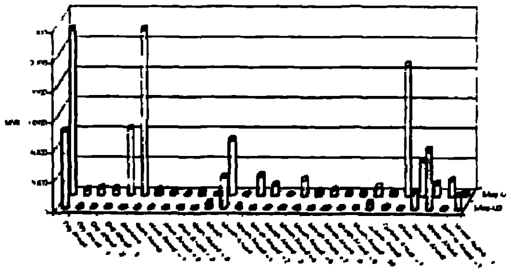
OTC Power Trades



NETA Daily Information

OTC Trading	• UK OTC price assessments • UK trades
Power Exchange	• UKPX prices and volumes • UKPX, IPE and APX settlement prices
Balancing Mechanism	• Previous day System Buy and System Sell Prices and volumes

OTC – Traded Volume by Period



Power Excahnges

- UK PX
  - Half hour contracts in lots of 0.5 MWh
  - Traded from the start of the day until the time of Gate Closure for a respective half hour
  - Account for most non-OTC trades
- UK APX
  - Trades EFA (Electriciy Forward Agreements) blocks
  - Four hours 1 MW blocks
  - From 5 days ahead to 30 minutes before Gate Closure

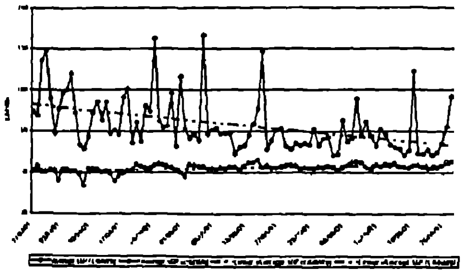
Balancing Mechanism

- NGC as SO is responsible for keeping the system in balance in real time.
- Generators and suppliers may submit Bids and Offers into the Balancing Mechanism.
  - Offers indicate a willingness to increase the level of generation or reduce the level of demand Conversely,
  - Bids indicate a willingness to reduce the level of generation or increase the level of demand

Balancing Mechanism

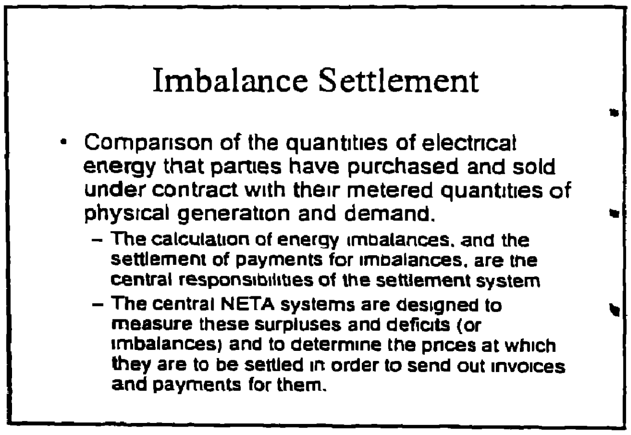
- The SO may accept particular Bids and Offers placed by generators and suppliers in order to control the national and local balance of generation and demand.
  - Accepted Offers (of more generation or less consumption) will be paid for at the prices offered,
  - accepted Bids will be paid as Bid.

Balancing Mechanism



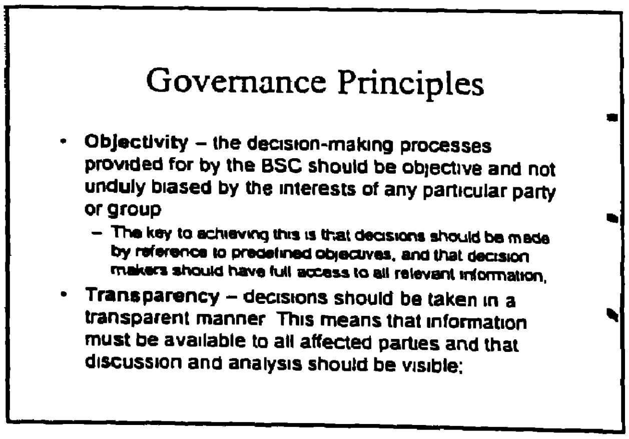
NETA: Imbalance Settlement

- The role of the NETA Program is not to dictate how energy will be bought and sold on these exchanges or in bilateral contracts. Instead it is to provide mechanisms for near real-time clearing and settlement of the imbalances between contractual and physical positions of those buying, selling, producing and consuming electrical energy.



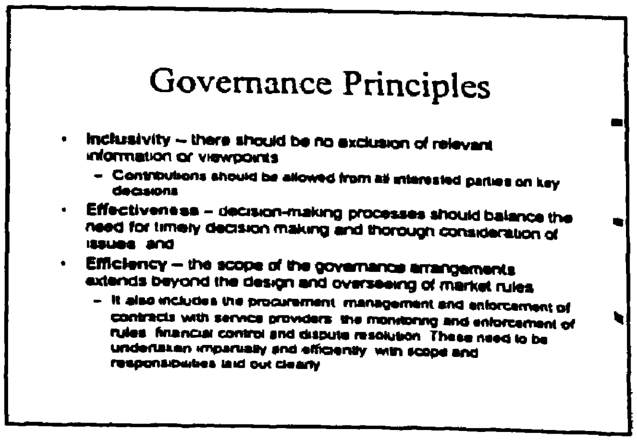
Imbalance Settlement

- Comparison of the quantities of electrical energy that parties have purchased and sold under contract with their metered quantities of physical generation and demand.
  - The calculation of energy imbalances, and the settlement of payments for imbalances, are the central responsibilities of the settlement system
  - The central NETA systems are designed to measure these surpluses and deficits (or imbalances) and to determine the prices at which they are to be settled in order to send out invoices and payments for them.



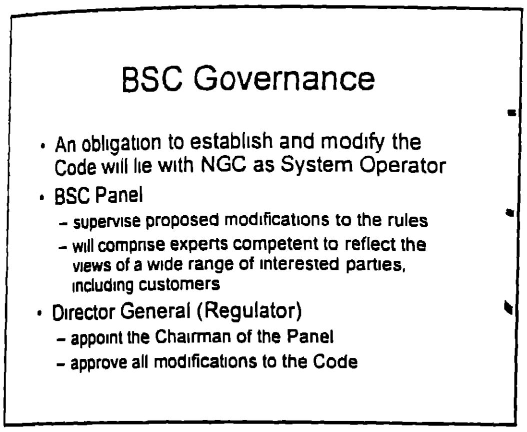
Governance Principles

- **Objectivity** – the decision-making processes provided for by the BSC should be objective and not unduly biased by the interests of any particular party or group
  - The key to achieving this is that decisions should be made by reference to predefined objectives, and that decision makers should have full access to all relevant information,
- **Transparency** – decisions should be taken in a transparent manner This means that information must be available to all affected parties and that discussion and analysis should be visible;



Governance Principles

- **Inclusivity** – there should be no exclusion of relevant information or viewpoints
  - Contributions should be allowed from all interested parties on key decisions
- **Effectiveness** – decision-making processes should balance the need for timely decision making and thorough consideration of issues and
- **Efficiency** – the scope of the governance arrangements extends beyond the design and overseeing of market rules
  - It also includes the procurement management and enforcement of contracts with service providers the monitoring and enforcement of rules financial control and dispute resolution These need to be undertaken impartially and efficiently with scope and responsibilities laid out clearly



BSC Governance

- An obligation to establish and modify the Code will lie with NGC as System Operator
- BSC Panel
  - supervise proposed modifications to the rules
  - will comprise experts competent to reflect the views of a wide range of interested parties, including customers
- Director General (Regulator)
  - appoint the Chairman of the Panel
  - approve all modifications to the Code

Rohan Samarajiva
Team Leader
Public Interest Program Unit
Ministry of Economic Reform, Science and Technology
Government of Sri Lanka
Fax: +94 1 346727
Tel: +94 1 478733
E-mail: Rohan@perc.gov.lk, samarajiva@lirne.net

Professor Rohan Samarajiva is currently assisting the government of Sri Lanka as Team Leader of the Public Interest Program Unit of the Ministry of Economic Reforms. His responsibilities include the formulation and implementation of a services and enabling infrastructures strategy for Sri Lanka and the establishment of a multi-sector regulatory agency for public utilities. He also serves as Director of External Programs, Learning Initiatives for Reforms in Network Economies (LIRNE.NET, a collaboration between the leading technical universities of Denmark and the Netherlands); and Senior International Specialist, National Regulatory Research Institute (NRRI), USA. Samarajiva was Director General of the Telecommunications Regulatory Commission in Sri Lanka (1998-99), Associate Professor of Communication and Public Policy, at the Ohio State University (1987-2000), and is currently Visiting Professor of Economics of Infrastructures at the Delft University of Technology in the Netherlands. He chaired the expert workshop on fixed-mobile interconnection for the International Telecommunication Union (ITU) and serves on the expert group on International Telecommunication Regulations, appointed by the Secretary General of the ITU. He has provided expert assistance to government authorities, regulatory agencies and consumer and citizen groups in Australia, Bhutan, Canada, India, Mexico, Morocco, South Africa and several US states, in addition to Sri Lanka.

Developments in US price regulation

Rohan Samarajiva
LIRNE.NET
Delft University of Technology, Netherlands

Overview

- Based on assessments of federal (1990-98) & state (1984-98) regulation of telephone carriers, by
    - Former FCC Common Carrier Bureau Tariff Division Chief Gregory N Vogt's article in *Federal Communications Law Journal* 5(2), fulltext available at http://www.law indiana.edu/fclj/pubs/v5 1/no2/vogtmac6.pdf, and

Overview

- National Regulatory Research Institute (Jaison Abel & Michael Clements), Report 98-25, fulltext available at http://www nrri ohio-state edu/download htm)
- International assessment: Xavier, P. (1995). Price cap regulation for telecommunications. *Telecommunications Policy*, 19(8), 599-617
- Focus on problems of application
- Emphasis on conceptual issues and relevance to South Asia

Starting point

- Rate base rate-of-return regulation
  - Estimate annual revenue requirement (op expenses, dep. charges; taxes; investment; allowed return)
  - Allocate rev. requirement to different classes
  - Design prices for specific services
- In effect in US since 1960s

Problems with RBROR

- Perverse incentives
  - Rewards higher investments (gold plating)
  - Cost savings passed through (no incentive to reduce costs)
- Time consuming
  - Requires skills and information
  - Need to distinguish between investment and costs

FCC approach

- Abandoned RBROR in 1990 by Dominant Carriers 2nd Report & Order
  - "rate of return does not provide sufficient incentives for broad innovations in the ways firms do business" --para 32
  - Considered and rejected "social contract" (obligations plus rate freeze) regulation
  - Adapted RPI-X method developed in UK

FCC's modified RPI-X

- New price cap = Inflation +/- Exogenous costs -Productivity adjustment (X factor)
- Inflation measured by GNP price index
- Two options to operators (1990):
  - Low X, normal return on investment
  - High X, high return

FCC's modified RPI-X

- Sharing (to prevent windfall for operator)
  - With X=2.8%, operator kept
    - all returns up to 12.25%
    - 50% of returns between 12.25-16.25%
    - 0% of returns above 16.25%
  - With X=3.8%, operator kept
    - all returns up to 13.25%
    - 50% of returns between 13.25-17.25%
    - 0% of returns above 17.25%

FCC's modified RPI-X

- Consumer productivity dividend (+0.5%)
- Low-end adjustment (to protect operator)
  - Operators guaranteed 10.25% return
  - FCC retained right to exclude effects of mismanagement, fraud, etc.
- Exogenous costs
  - "triggered by administrative, legislative or judicial action"

FCC's modified RPI-X

- Price cap applied to baskets, not to individual services
  - Common line services
  - Traffic sensitive services
  - Special access services
  - Interexchange services
  - Video dialtone services (added later)
  - Marketing expenses (added later)

FCC's modified RPI-X

- Changes in prices of specific services limited to bands
  - Individual prices that were 5% higher/lower than price cap assumed to be reasonable
  - To decrease by more than 5%, demonstration was required that price>cost
    - to prevent predatory pricing

Changes to FCC price cap (1995 and 1997)

- Changes to X factor
  - Basic X raised from 2.8 to 3.5 in 1995
  - Alternatives: X=4.2 (reduced sharing); X=4.7 (no sharing)
  - Single X factor of 6.0% adopted in 1997; retroactive to 1997-98 tariff year
  - Consumer Productivity Dividend (+ 0.5%) retained

Changes to FCC price cap (1997)

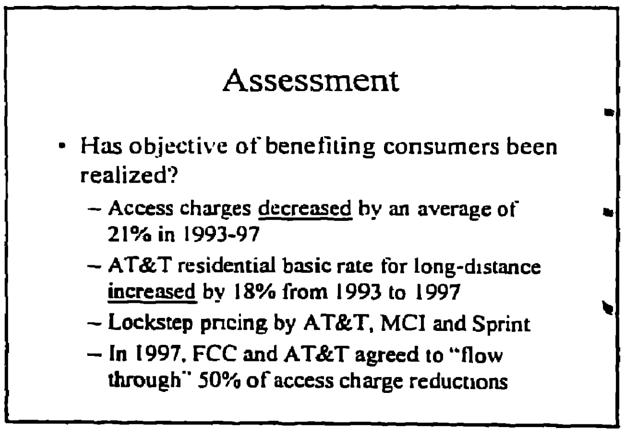
- Narrowed scope of exogenous costs
- Sharing eliminated
- Low-end adjustment retained

Assessment

- AT&T small business & residential prices have been kept near price-cap levels
- Price index for res. services declined from 98.8 (June 1989) to 93.6 (July 1993)
- AT&T commercial basket fell to below price cap limits (96.8 to 94.1)

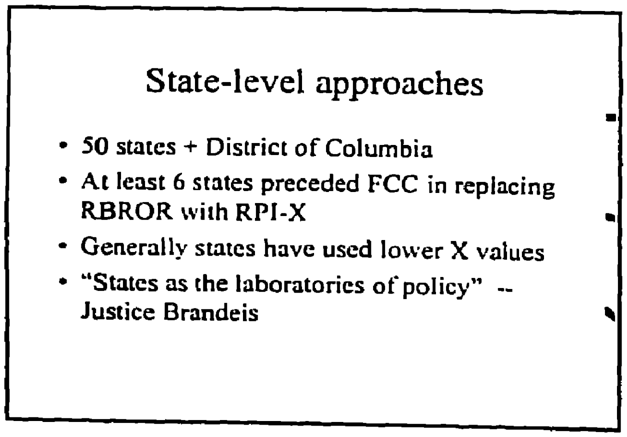
Assessment

- Tinkering with mechanism, especially increase of X and reduction of exogenous costs, reduces purported benefits of price cap approach
  - Rewards reduced
  - Uncertainty increased, reducing innovations in efficiency
- General problem with price caps
  - UK OFTEL: from 3 to 7.5



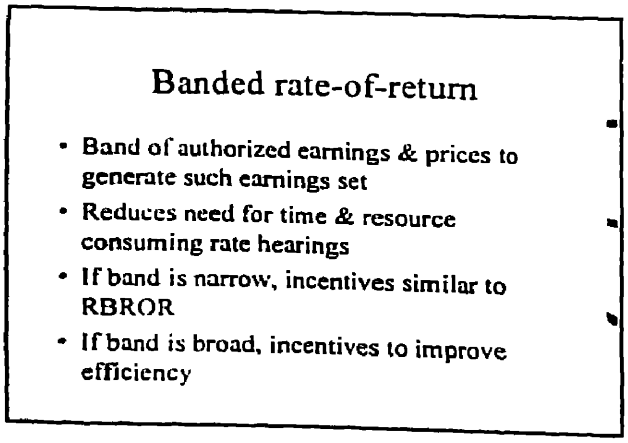
Assessment

- Has objective of benefiting consumers been realized?
  - Access charges decreased by an average of 21% in 1993-97
  - AT&T residential basic rate for long-distance increased by 18% from 1993 to 1997
  - Lockstep pricing by AT&T, MCI and Sprint
  - In 1997, FCC and AT&T agreed to "flow through" 50% of access charge reductions



State-level approaches

- 50 states + District of Columbia
- At least 6 states preceded FCC in replacing RBROR with RPI-X
- Generally states have used lower X values
- "States as the laboratories of policy" -- Justice Brandeis



Banded rate-of-return

- Band of authorized earnings & prices to generate such earnings set
- Reduces need for time & resource consuming rate hearings
- If band is narrow, incentives similar to RBROR
- If band is broad, incentives to improve efficiency

Rate case moratoria

- Agreements to suspend investigations and hearings to return earnings to target levels (2-5 years)
- Usually accompanied by infrastructure build-out commitments and service-quality obligations
- Creates short-term cost-reduction incentives

Earnings sharing

- Earnings = Gross revenues - Expenses
- Banded ROR + arrangements for higher bands, e.g.,
  - Operator keeps 100% of earnings up to x%
  - Operator and consumers share earnings between x% and y%
  - Consumers get most of earnings above y%

Earnings sharing

- Weaker incentives to reduce costs than RPI-X
- Banded ROR plus earnings sharing (as above) conditional on achievement of performance standard
- Earnings are somewhat more difficult to ascertain than revenues

Revenue sharing

- Applies to increases in gross revenues resulting from production-cost reductions
- Stronger form of earnings sharing

Indexed price caps

- Price cap = GDP Price Index -X +/- Exogenous Factor
- Some states require earnings sharing above a threshold, in addition

Social contracts & rate freezes

- Special treatment (e.g., rate freeze) in return for broadband investment)

Pricing flexibility

- Some state classify services as
  - basic
  - discretionary
  - potentially competitive
  - competitive
- Less regulatory control from basic to competitive

Deregulation

- All services other than basic local service unregulated
- Earnings unregulated
- Nebraska is sole example

Hybrid solutions

- Most states (and FCC) use a range of solutions
  - Large vs small operators
  - Different services
  - Hybrid approaches for same service

Lessons for South Asia

- Incentive regulation is not an exact science; discretion is required; must be exercised properly
- Be clear about overall objectives; don't change course too often
- RPI-X and other forms of incentive regulation are not as simple as they appear
- Develop cost analysis skills and systems

Possible improvements

- Debate in pioneering countries re appropriate inflation indicator
  - What relevance does retail price have to telecom?
  - Retail inflation > sector inflation, in general
- How can exchange-rate effects be accommodated?

Possible improvements

- Determination of the X factor
  - Negotiated with operator?
  - Based on productivity studies?
- Design of baskets
- Different Xs for different baskets?
- Proper starting point essential for effective price caps; need to rebalance

Virgilio C. Rivera, Jr.
Group Director
Regulatory Affairs & Planning
Manila Water Company
Manila, Philippines
Tel. (632) 9281459
Mobile. (63-917) 8177350
E-mail: perry.rivera@manilawateronline.com>

Mr Rivera, born in 1961 and a Master of Science in Economics from De La Salle University, is an accomplished, seasoned and flexible executive with proven success in various industries and effectiveness in working with multi-national expatriates. He has extensive experience in strategic planning, industry analysis, business development, corporate/project finance and economic regulation.

Mr Rivera is associated with Manila Water Company, Inc. (MWCI) since 1997 as Group Director - Regulatory Affairs & Planning. His key responsibilities involved formulation of the company's regulatory objectives, strategies and tactics with focus on achieving optimal tariff adjustment, regulatory risk management, and compliance with contract-based service obligations. Management of the company's business planning process. Assist MWCI's CEO and Board in the formulation of business goals and strategies.

He served Ayala Corporation (1995-1997) as Manager/Associate Director – Strategic Planning Group. He also worked for Continental Manufacturing Corporation.

One of his major achievements is to establish an extensive network with Philippine regulatory bodies particularly in the water sector.

He attended several training and workshops in Philippines and abroad. Lectured in various workshops in India, Japan and Australia on privatization and public-private partnership initiatives. Most of these workshops were sponsored by the World Bank and host national governments. He authored several papers in the field.

South Asia Forum for Infrastructure Regulation
Course on Infrastructure Regulation and Reform
September 15-23, Goa, India

International Case Study

Restructuring, Regulation, Price Setting and Serving the Urban Poor The Case of Manila Water Company under the MWSS Privatization

Virgilio C. Rivera, Jr.
Group Director
Regulatory Affairs & Planning
Manila Water Company
Philippines

Discussion Points

- Part 1: Case Study on Reform and Regulation: MWSS Privatization Process
- Part 2: Case Study on Price Setting
- Part 3: Case Study on Post-Privatization Performance of Manila Water and Provision of Service to the Urban Poor
- Part 4: Concluding Remarks

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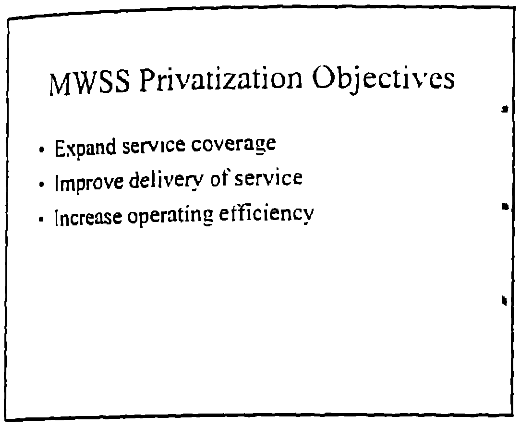
The Water System Before Privatization

MWSS vs. Asian Utilities

Source: Second Water Utilities Data Book, Asian and Pacific Region, Asian Development Bank, Oct. 1997
Statistics cited above were essentially based on 1996 data.

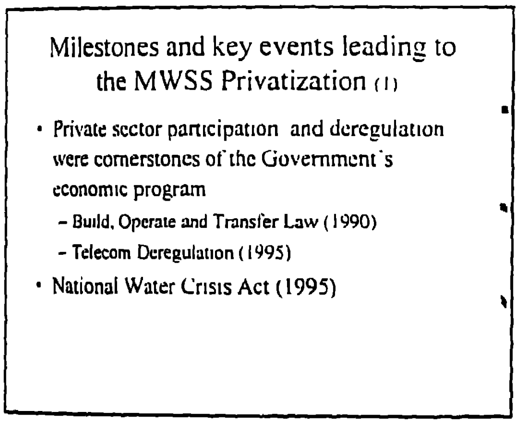
MWSS Financial Highlights 1993-1995

Source: Preliminary Information to Interested Bidders, MWSS and IFC 1996



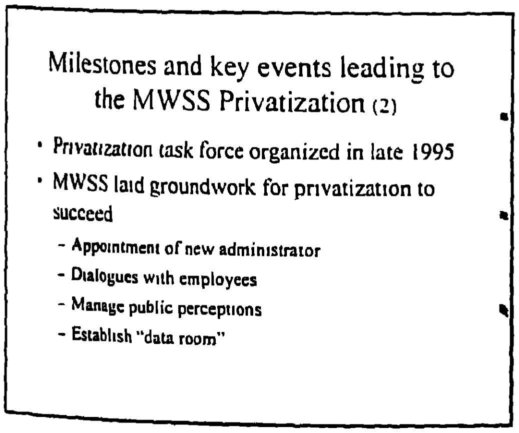
MWSS Privatization Objectives

- Expand service coverage
- Improve delivery of service
- Increase operating efficiency



Milestones and key events leading to the MWSS Privatization (1)

- Private sector participation and deregulation were cornerstones of the Government's economic program
  - Build, Operate and Transfer Law (1990)
  - Telecom Deregulation (1995)
- National Water Crisis Act (1995)



Milestones and key events leading to the MWSS Privatization (2)

- Privatization task force organized in late 1995
- MWSS laid groundwork for privatization to succeed
  - Appointment of new administrator
  - Dialogues with employees
  - Manage public perceptions
  - Establish "data room"

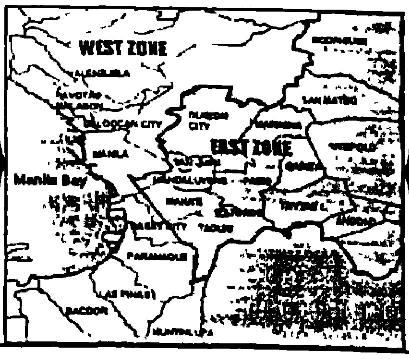
Milestones and key events leading to the MWSS Privatization (3)

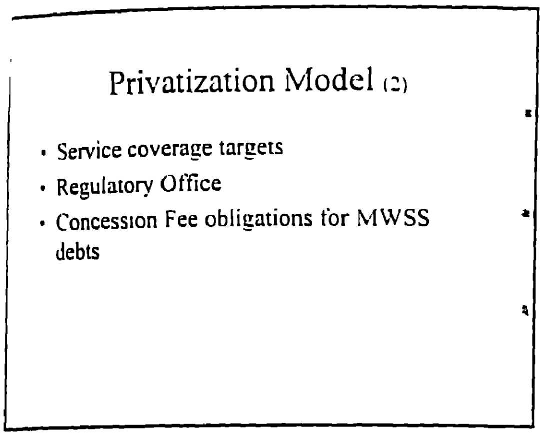
- Government gained private sector support
  - Aboitiz / Vivendi
  - Ayala Corp / United Utilities
  - Benpres / Lyonnaise des Eaux
  - Metro Pacific / Anglian Water
- Turnover of MWSS to private sector operators completed in less than 2 years!

Privatization Model (1)

- Two 25-year concessions
- Competitive bidding
- Operators responsible for O&M and investment
- Operators assured "guaranteed rate of return" through ADR

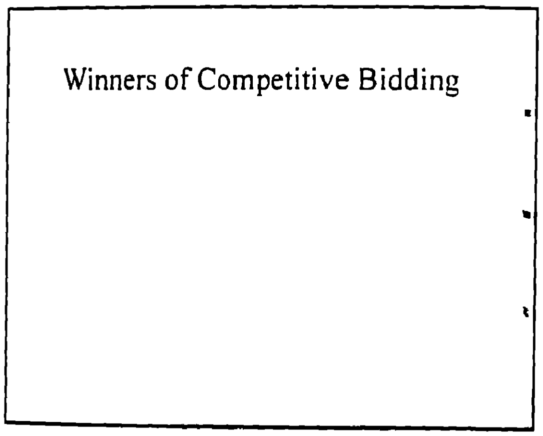
Metro Manila's West and East Zones



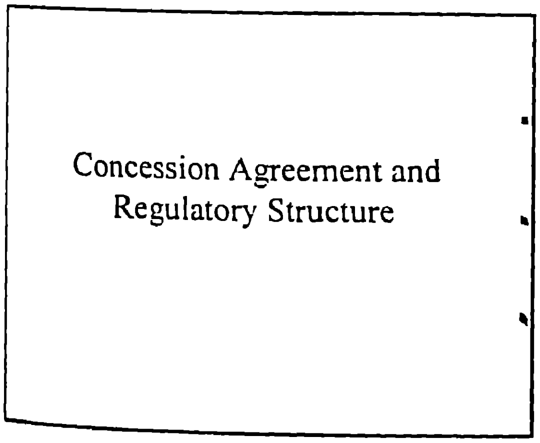


Privatization Model (2)

- Service coverage targets
- Regulatory Office
- Concession Fee obligations for MWSS debts

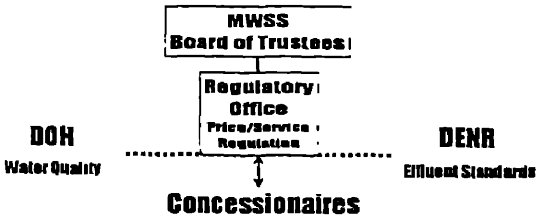


Winners of Competitive Bidding

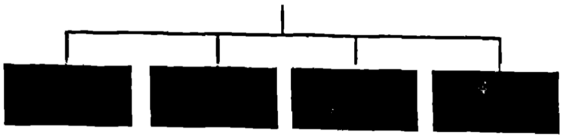


Concession Agreement and Regulatory Structure

MWSS Regulatory Structure

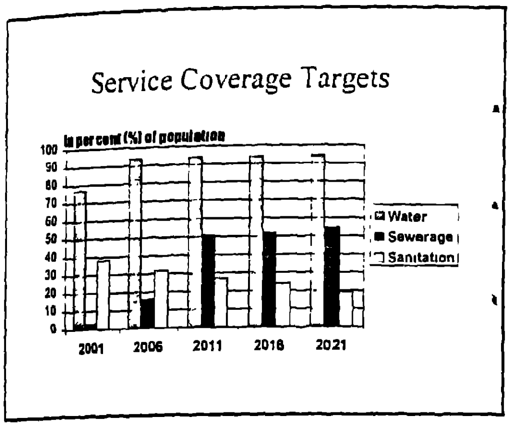


MWSS Regulatory Office

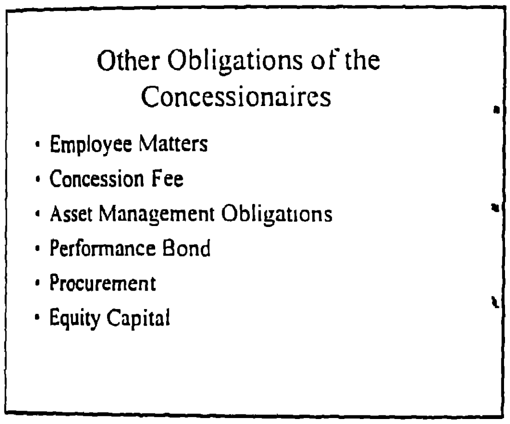


Service Obligations

- Provide water services
  - Make new water supply connections
  - Continuity of supply (24-hrs/16psi)
  - Compliance with drinking water quality standards
- Provide sewerage services
  - Make new sewerage connections
  - Compliance with wastewater standards
  - Septic and sanitation cleaning
- Meet customer service standards

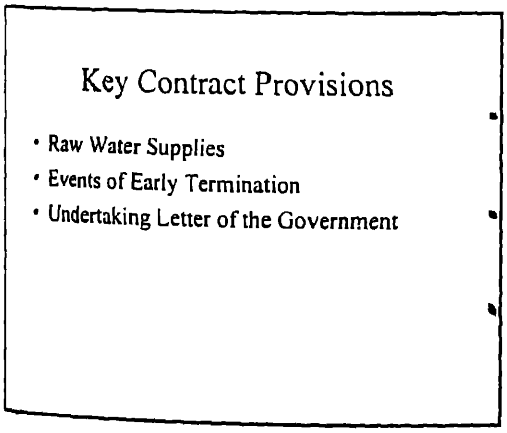


Service Coverage Targets



Other Obligations of the Concessionaires

- Employee Matters
- Concession Fee
- Asset Management Obligations
- Performance Bond
- Procurement
- Equity Capital



Key Contract Provisions

- Raw Water Supplies
- Events of Early Termination
- Undertaking Letter of the Government

Discussion Points

- Part 1. Case Study on Reform and Regulation: MWSS Privatization Process
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Economic Regulation : Pre- and Post-Privatization

1997

Rate of Return Regulation	Rate of Return Regulation + Price Cap Regulation
$\frac{\text{Net Income}}{\text{Operating Assets + Working Capital}} = 12\%$	

Rates Adjustment Limit

	Factor
• Consumer Price Index	C
• Extraordinary Price Adjustment	E
• Rate Re-Basing	R

Rates Adjustment Limit

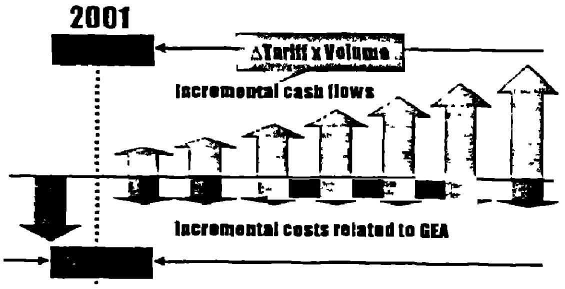
• Consumer Price Index	-6%
• Extraordinary Price Adjustment	0%
• Rate Re-Basing	0%
Rates Adjustment Limit	+6%

EXTRAORDINARY PRICE ADJUSTMENT

Grounds for Extraordinary Price Adjustment

1 Amendment of service obligations
2 Change of law regulation, rule or order
3 Breach of contract
4 Receipt of grant
5 Material change in CPI definition
6 Change in foreign exchange rate
7 Unpaid penalty
8 Change in bid assumptions
9 Increase in Concession Fee due to UATP cost overrun
10 Delay in UATP affecting Concessionaire's financial performance
11 Event of Force Majeure

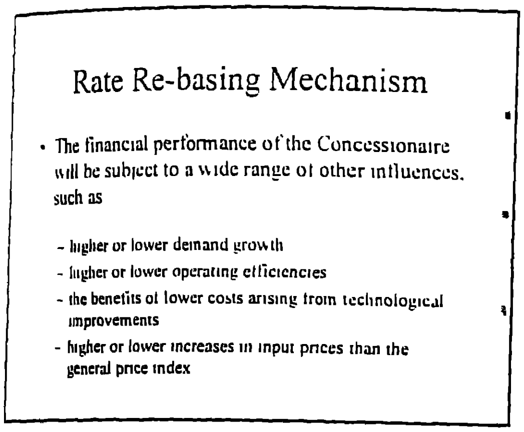
Extraordinary Price Adjustment



Rates Adjustment Limit

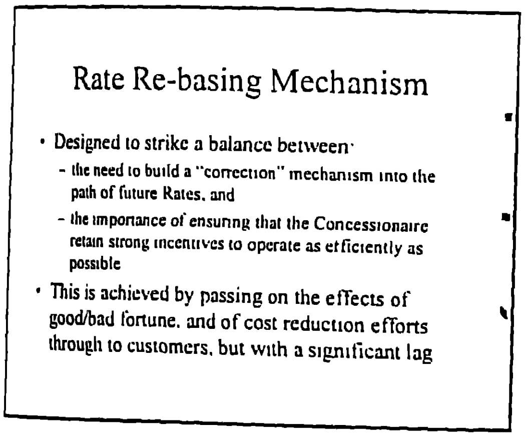
• Consumer Price Index	+6%
• Extraordinary Price Adjustment	+3%
• Rate Re-Basing	0%
Rates Adjustment Limit	+9%

RATE REBASING



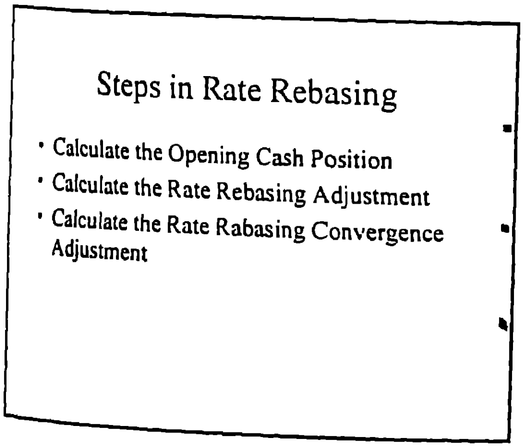
Rate Re-basing Mechanism

- The financial performance of the Concessionaire will be subject to a wide range of other influences, such as
  - higher or lower demand growth
  - higher or lower operating efficiencies
  - the benefits of lower costs arising from technological improvements
  - higher or lower increases in input prices than the general price index



Rate Re-basing Mechanism

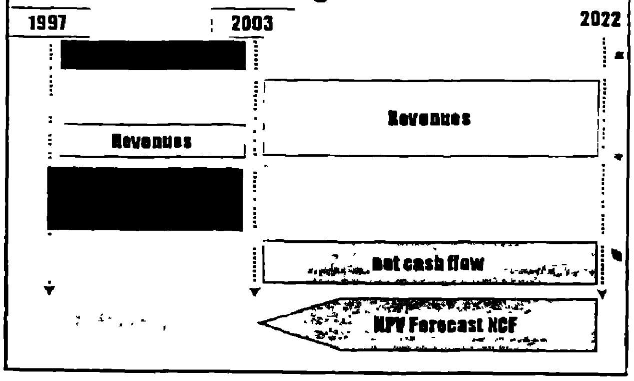
- Designed to strike a balance between·
  - the need to build a "correction" mechanism into the path of future Rates, and
  - the importance of ensuring that the Concessionaire retain strong incentives to operate as efficiently as possible
- This is achieved by passing on the effects of good/bad fortune, and of cost reduction efforts through to customers, but with a significant lag



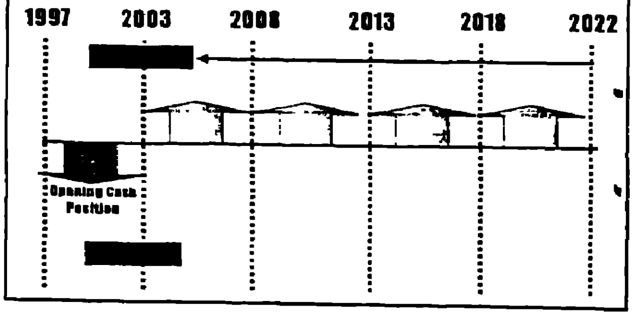
Steps in Rate Rebasing

- Calculate the Opening Cash Position
- Calculate the Rate Rebasing Adjustment
- Calculate the Rate Rabasing Convergence Adjustment

Rate Rebasing Mechanism

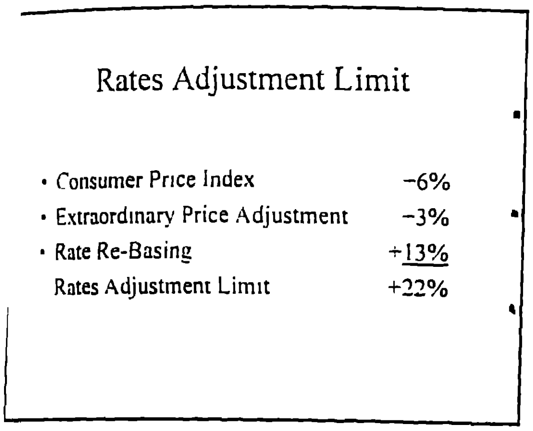


Calculating the Opening Cash Position and Rate Re-basing Adjustment Case A: "Positive" Re-basing



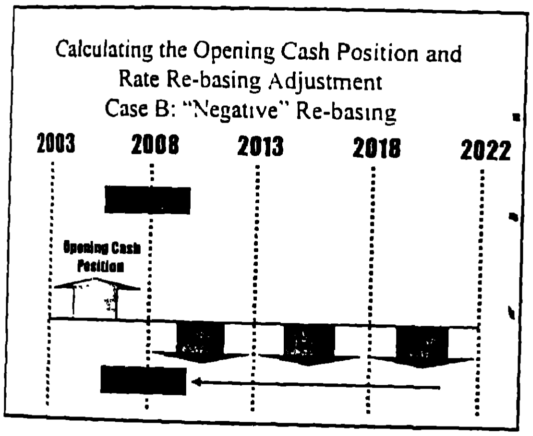
Calculating the Re-basing Convergence Adjustment Case A 13% "Positive" Re-Basing

	2003	2004	2005	2006	2007
"R" Factor	+13%	0%	0%	0%	0%

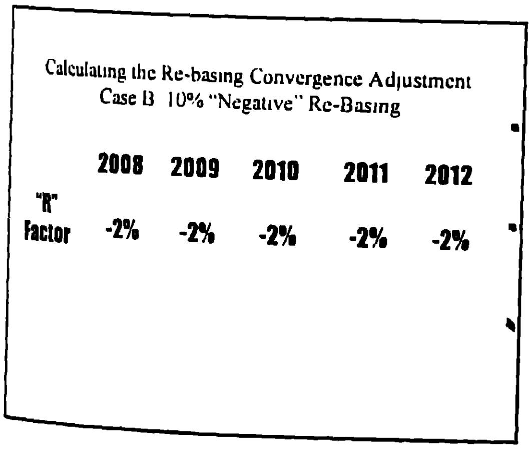


Rates Adjustment Limit

• Consumer Price Index	−6%
• Extraordinary Price Adjustment	−3%
• Rate Re-Basing	+13%
Rates Adjustment Limit	+22%



Calculating the Opening Cash Position and Rate Re-basing Adjustment
Case B: "Negative" Re-basing



Calculating the Re-basing Convergence Adjustment
Case B 10% "Negative" Re-Basing

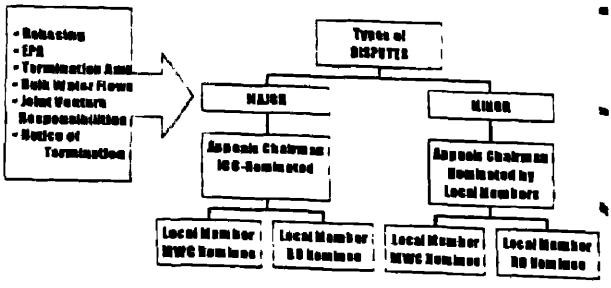
	2008	2009	2010	2011	2012
"R" Factor	-2%	-2%	-2%	-2%	-2%

Rates Adjustment Limit

• Consumer Price Index	+6%
• Extraordinary Price Adjustment	+3%
• Rate Re-Basing	-2%
Rates Adjustment Limit	+7%

DISPUTE RESOLUTION THROUGH APPEALS PROCESS

Types of Disputes



- Rebasing
- EPA
- Termination Amd
- Bulk Water Flows
- Joint Venture Responsibilities
- Notice of Termination

Types of DISPUTES

MAJOR

Appeals Chairman ICC-Nominated

Local Member MWC Nominee

Local Member BD Nominee

MINOR

Appeals Chairman Nominated by Local Members

Local Member MWC Nominee

Local Member BD Nominee

Panel Procedures

- Adopt United Nations Commission on International Trade Law (UNCITRAL) arbitration rules
- Decision in 90 days from receipt of Dispute Notice
- Majority (2 out 3 panel members) decision
- Engage consultants
- Proceedings in English; venue in Manila
- Waiver of Right to Appeal by parties

Case Study on Dispute Resolution through International Arbitration

Appeals Panel

- Chairman – Australian lawyer appointed by ICC with the experience of handling more than 50 international arbitration cases;
- Member – a Filipino financial expert appointed by Manila Water; and
- Member – a Filipino financial expert appointed by the Regulatory Office.

Key Disputed Issue

- Correct interpretation of the definition of Appropriate Discount Rate (ADR)
- Manila Water Position
  - market-driven ' 18% ADR
  - 1997-1998 Asian financial crisis also a factor for high ADR
- Regulatory Office Position
  - Regulator has sole discretion
  - 5 2% project rate of return implied in the "aggressive' bid of Manila Water should be the ADR

Appeals Panel Decision

- Procedures adopted
  - apply the terms of the Concession Agreement
  - engage a financial economic expert
  - exercise judgement
- ADR should be based on prevailing market conditions Appropriate ADR is 9.3%
- Delay in implementation due to petition filed by Regulator in local court to "review" the ruling

The Dispute: Determination of Appropriate Discount Rate

- At any time, the real weighted average cost of capital
- In determining the ADR Regulator shall
  - Apply conventional and internationally accepted methods
  - Estimate Cost of Equity and Cost of Debt
  - Adjust for country, exchange rate and project risks
- At its sole discretion, the Regulator may consider the Concessionaire's rate of return, either stated or implied in its bid in determining the ADR

Complying with International Appeals Process to Settle Disputes

Submission to RO

RO Resolution

Dispute Notice

Selection of Members of Arbitration Panel

Submission to Arbitration Panel of Case

Arbitration Hearings

Arbitration Decision

EFFECTIVITY

New Regulatory Opportunities and Challenges

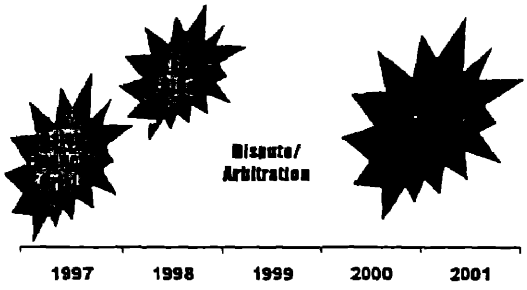
- Financial Problem of the West Zone Operator
- New Water Bills: Consolidating Economic Regulation in the Philippines
- Raw Water Pricing and Tradable Water Rights

Discussion Points

- Part 1: Case Study on Reform and Regulation: MWSS Privatization Process
- Part 2: Case Study on Price Setting
- Part 3: Case Study on Post-Privatization Performance of Manila Water and Provision of Service to the Urban Poor
- Part 4: Concluding Remarks

Manila Water's Performance

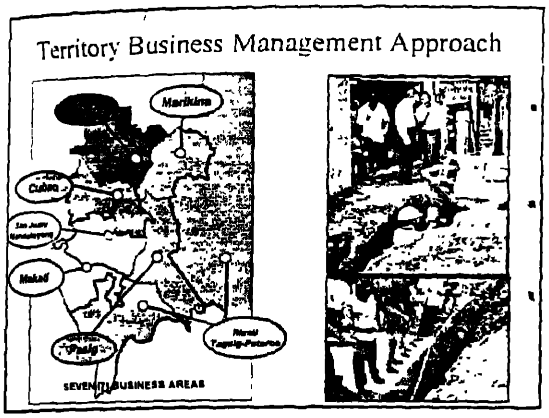
Major Challenges



Adopted New Corporate Value

WE CARE for

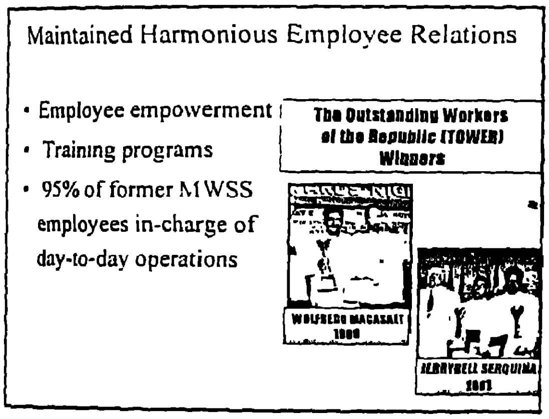
Customers Company Employees



Territory Business Management Approach

Marikina
Cubao
San Juan Mandaluyong
Makati
Pasig
Taguig-Pateros

SEVEN (7) BUSINESS AREAS



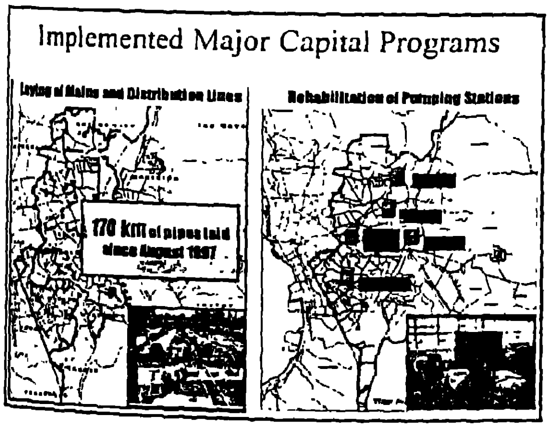
Maintained Harmonious Employee Relations

- Employee empowerment
- Training programs
- 95% of former MWSS employees in-charge of day-to-day operations

The Outstanding Workers of the Republic (TOWER) Winners

WOLFREDO MACASAET [illegible]

JERRYBELL SERQUINA [illegible]

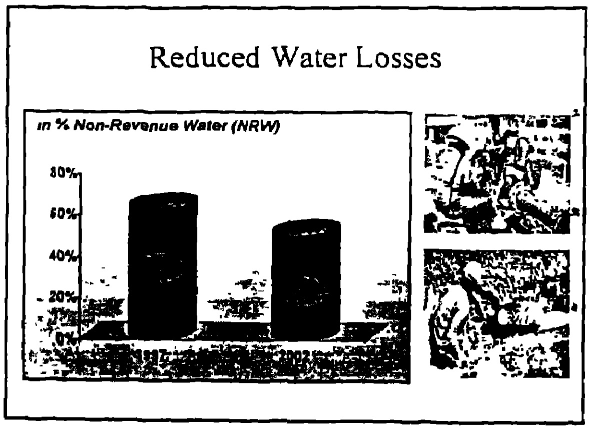


Implemented Major Capital Programs

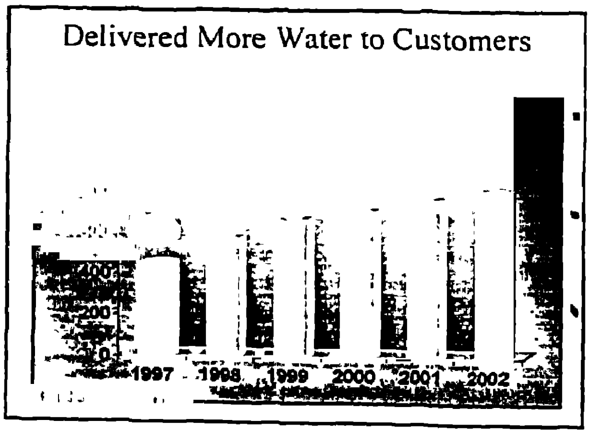
Laying of Mains and Distribution Lines

170 km of pipes laid since August 1997

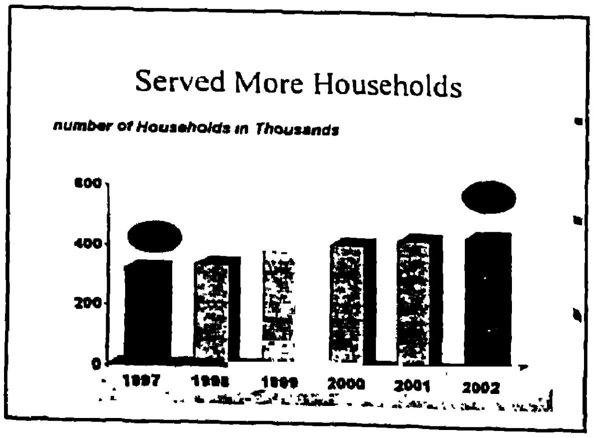
Rehabilitation of Pumping Stations



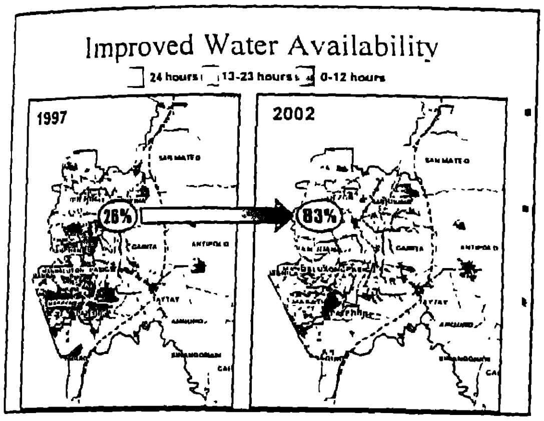
Reduced Water Losses



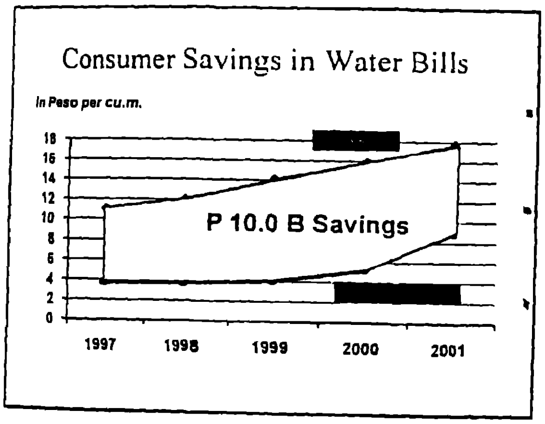
Delivered More Water to Customers



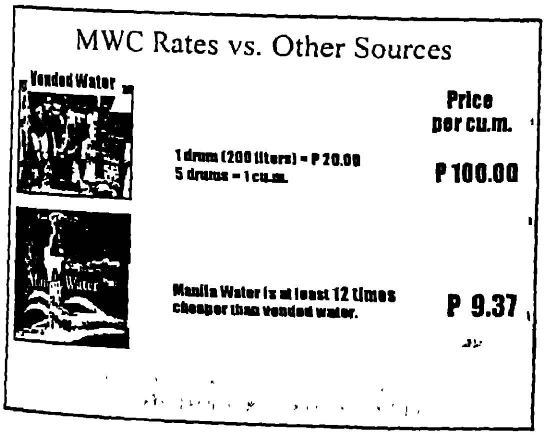
Served More Households



Improved Water Availability



Consumer Savings in Water Bills



MWC Rates vs. Other Sources

Vended Water

Price per cu.m.

1 drum (200 liters) = ₱ 20.00
5 drums = 1 cu.m.

₱100.00

Manila Water is at least 12 times cheaper than vended water.

P 9.37

Efficiency Indicators

*includes personnel, power, chemicals and other direct O&M cost but excludes interest expense, depreciation and amortization

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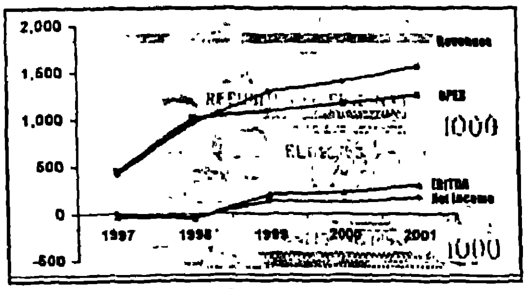
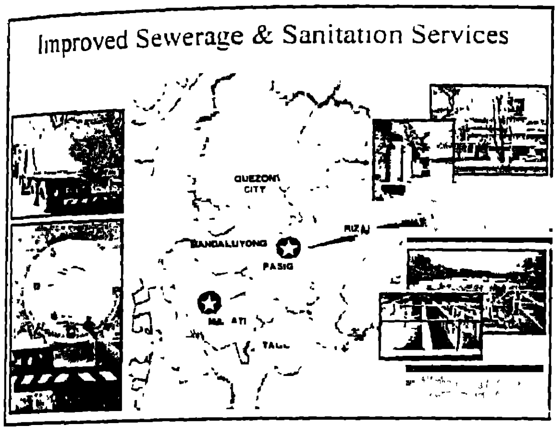
Comparative Efficiency Indicators

*includes personnel, power, chemicals and other direct O&M cost but excludes interest expense, depreciation and amortization.
Source of basic data: MWCI, Local Water Utilities Authority figures based on monthly financial reports submitted between October and December 2001

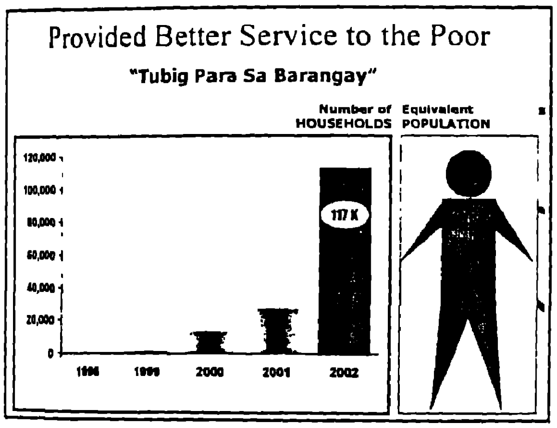
Financial Performance

In Million Pesos



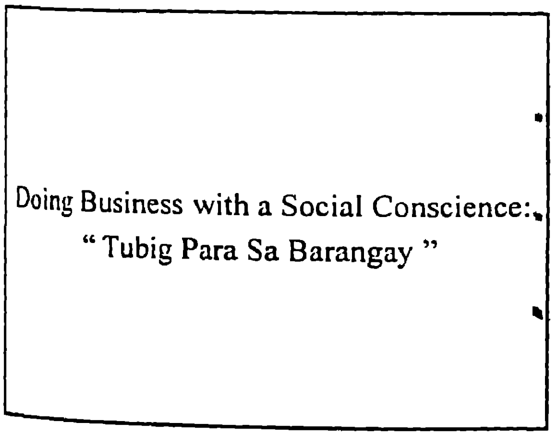


Improved Sewerage & Sanitation Services



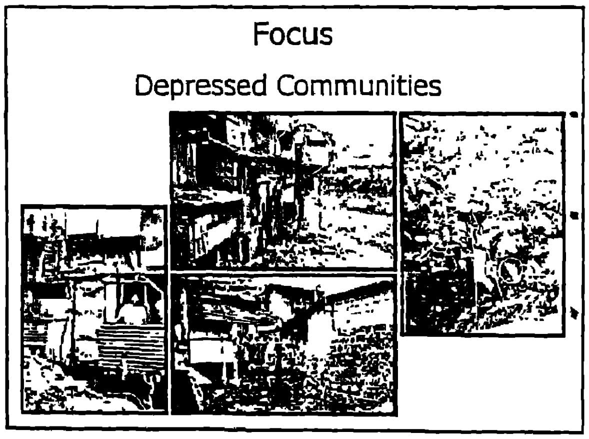
Provided Better Service to the Poor

"Tubig Para Sa Barangay"



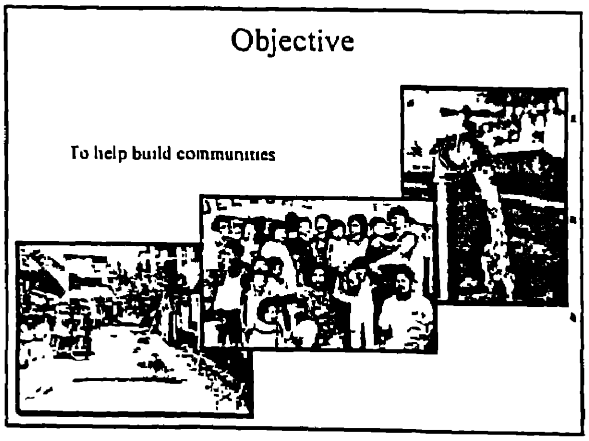
Doing Business with a Social Conscience:

" Tubig Para Sa Barangay "



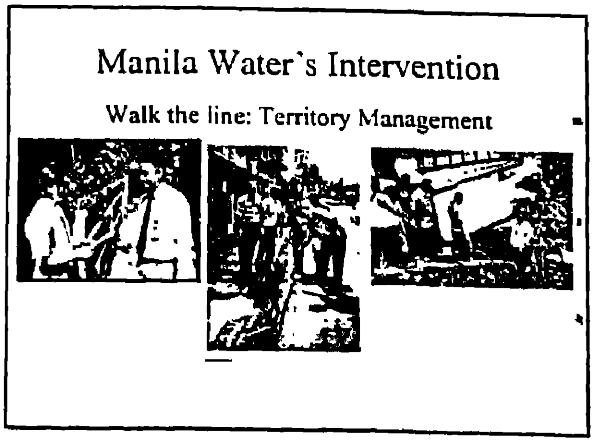
Focus

Depressed Communities



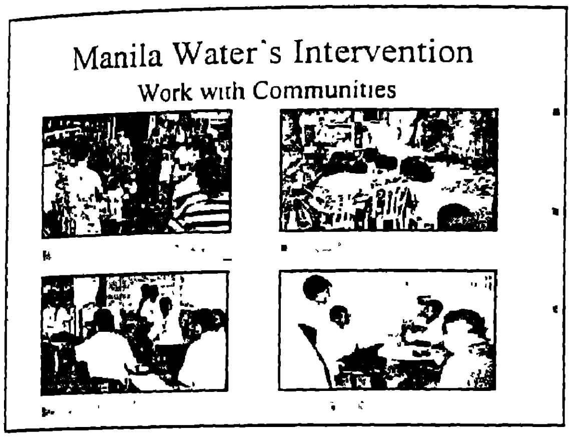
Objective

To help build communities



Manila Water's Intervention

Walk the line: Territory Management

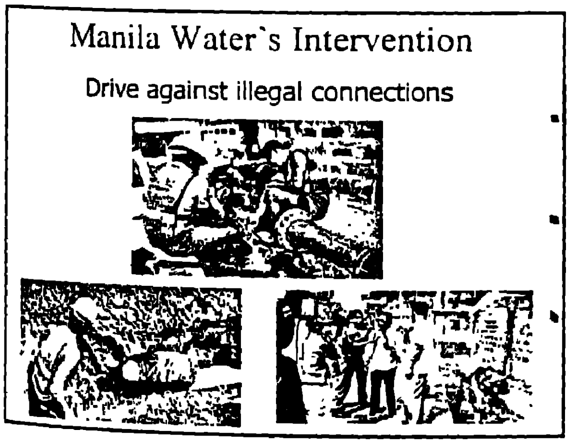


Manila Water’s Intervention

Work with Communities

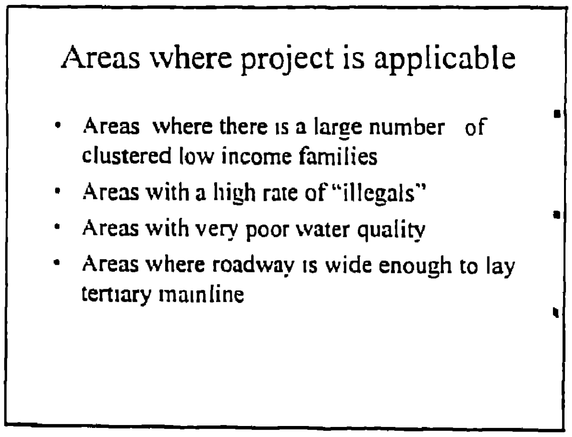
Manila Water’s Intervention

Massive Leak Repair



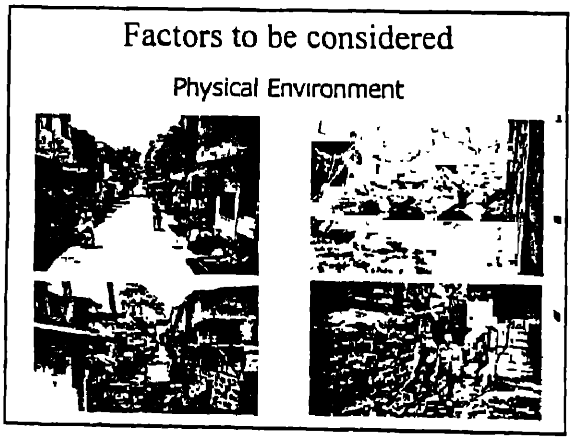
Manila Water’s Intervention

Drive against illegal connections



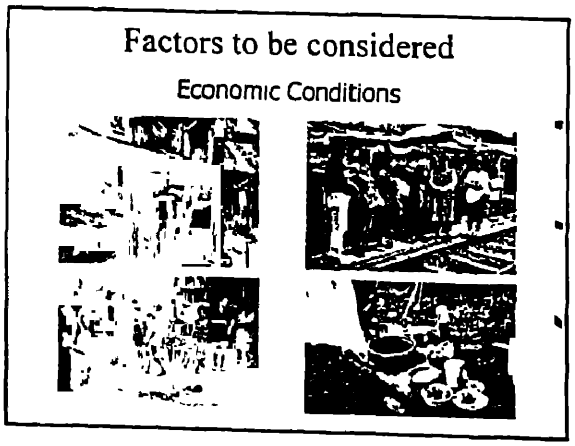
Areas where project is applicable

- Areas where there is a large number of clustered low income families
- Areas with a high rate of "illegals"
- Areas with very poor water quality
- Areas where roadway is wide enough to lay tertiary mainline



Factors to be considered

Physical Environment



Factors to be considered

Economic Conditions

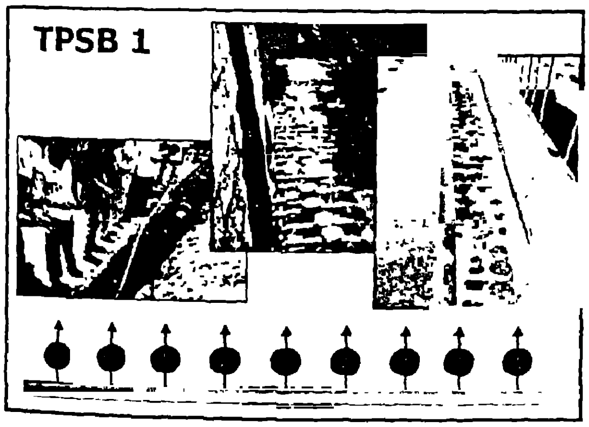
Factors to be considered

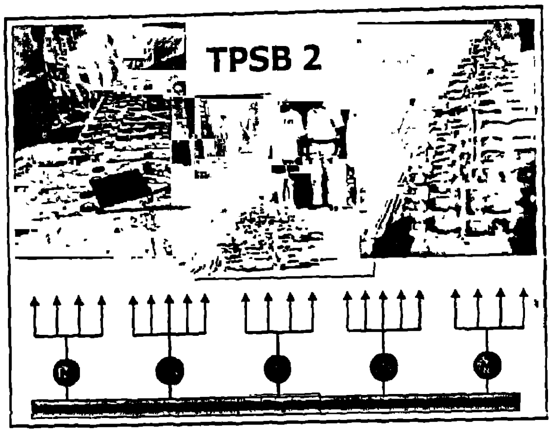
Community Relations

Type of Connections

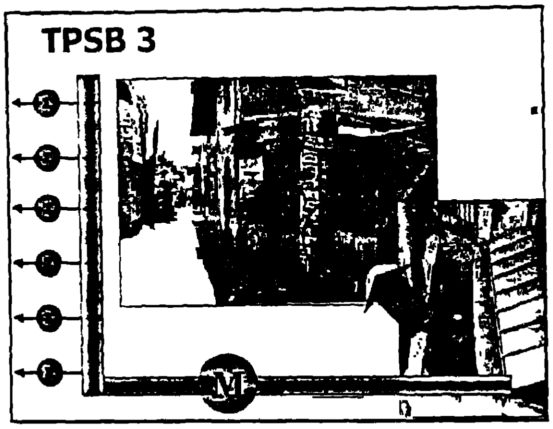
- TPSB 1
  Each household/family avail of individual connection
- TPSB 2
  Each meter/connection served four to five households/families
- TPSB 3
  A community with a mother meter

TPSB 1

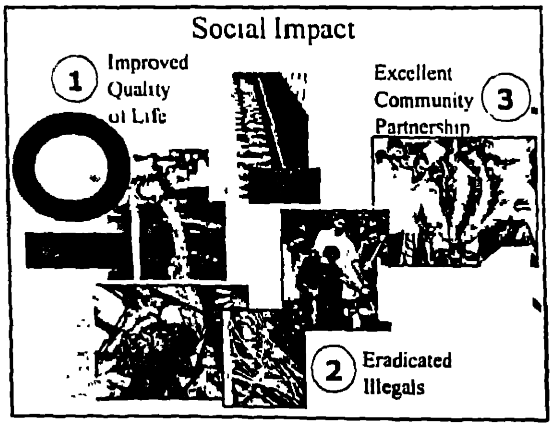




TPSB 2



TPSB 3



Social Impact

① Improved Quality of Life

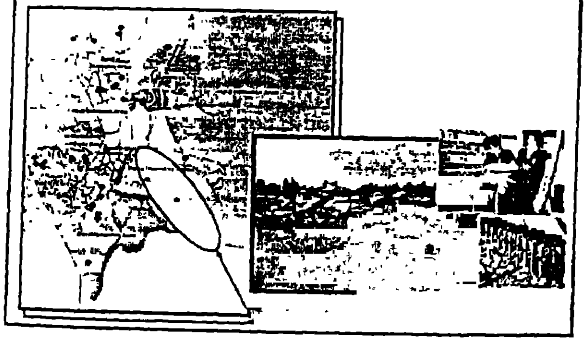
② Eradicated Illegals

③ Excellent Community Partnership

Completed Projects

	NO. OF PROJECTS	NO. OF HOUSEHOLDS
Balara	67	17,666
Cubao	26	1,845
Marikina	9	4,468
Pasig	14	13,283
SJ/Mand	23	8,018
Makati	22	2,630
Riz-T/Pat	24	7,010
Total	185	54,920

Ongoing & Future Projects



Discussion Points

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- Part 4: Concluding Remarks

Concluding Remarks (1)

On Industry Restructuring and Reform

- Key success determinants in MWSS privatization
  - Political will
  - Clear objectives
  - Well-organized, focused project team
  - Private sector support

Concluding Remarks (2)

- Impact of competitive bidding
  - Substantial windfall for customers but ..
  - May send wrong "economic pricing" signals
  - "Lowest price" rule may limit flexibility of regulator/operator to address external shocks
  - Possible alternative rule – "highest bid" for the concession fee

Concluding Remarks (3)

- Tariff gap between East and West Zones need to be addressed
- Restructuring an industry should be preceded by institutional reforms
- Ideal to have independent regulator but political objectives result in "second best" alternative
- "Regulation by contract" requires clear rules to be effectively implemented

Concluding Remarks (4)

On Regulatory Process

- Strengthen regulatory capacity
  - Competitive compensation
  - Good recruitment practices
  - 'On-the-job' training and development
  - Benchmarking practices
- Still best to resolve disputes through arbitration

Concluding Remarks (5)

On Price Setting

- Balancing full recovery of investment costs and affordability of rates remains a regulatory challenge
- Tariff formula may look good "in paper" but may not effectively address liquidity problems in light of external shocks

Concluding Remarks (6)

On Price Setting

- Ideal to have "automatic" tariff mechanism to address exchange rate volatility
- Operators need strong balance sheet and cash flows to address shocks
  - Best to require larger initial equity investment to avoid resorting to abrupt tariff adjustments

Concluding Remarks (7)

On Preserving Gains of Privatization

- Stronger "partnership" to improve regulatory structure
  - Sustain efficiency through incentives
  - Goal is still better service to customers
- Focus on serving the urban poor is a must
  - Should be part of operators' business plan

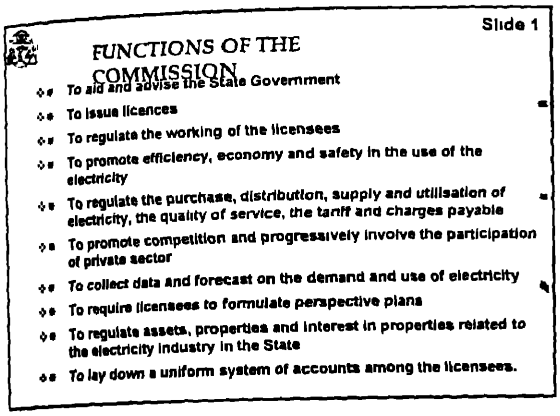
Manila Water

Thank You

For more information, please contact..
Virgilio C Rivera Jr.
Group Director
Regulatory Affairs and Corporate Planning
Tel. No (632) 928-1459
E-mail. perry.rivera@manilawater.com

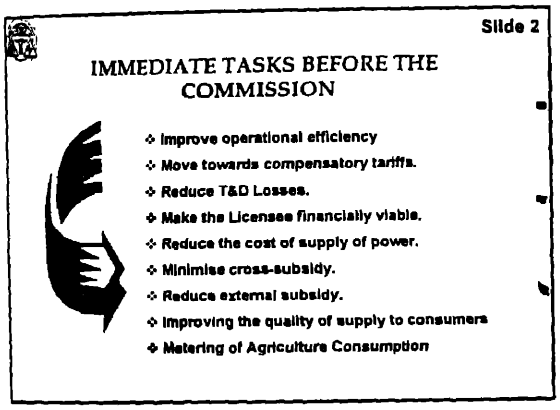
G P Rao
Chairman
Andhra Pradesh Electricity Regulatory Commission
E-mail: gummalla98@hotmail.com

Born on 13.09.1939. Sri G. P. Rao is a Bachelor of Science and Bachelor of Law. He has started his career in the Indian Army in 1963 as a Commissioned Officer following the Chinese War and retired in 1968 as a Captain. He joined the Indian Administrative Service in 1968 and was allotted to Andhra Pradesh Cadre. During his service in the Indian Administrative Service for three decades he has held many important positions such as, Commissioner and Special Officer, Municipal Corporation of Vijayawada, Collector and District Magistrate Karimnagar; Commissioner & Special Officer, Hyderabad Municipal Corporation, Counsellor (Finance), Embassy of India, Washington (D. C) U.S.A; Chairman and Managing Director, Singareni Collieries Company Ltd., Hyderabad; Joint Secretary to Government of India, Ministry of Commerce; Additional Secretary to Government of India, Ministry of Defence; and Secretary to Government of India, Department of Rural Employment and Poverty Alleviation before he retired in September, 1997. After his retirement, he was appointed as the State Vigilance Commissioner in Andhra Pradesh in November, 1998. He has been Chairman, Andhra Pradesh Electricity Regulatory Commission from 3rd April 1999.



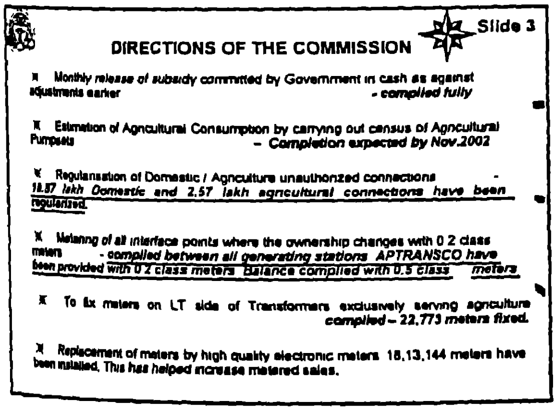
FUNCTIONS OF THE COMMISSION

- To aid and advise the State Government
- To issue licences
- To regulate the working of the licensees
- To promote efficiency, economy and safety in the use of the electricity
- To regulate the purchase, distribution, supply and utilisation of electricity, the quality of service, the tariff and charges payable
- To promote competition and progressively involve the participation of private sector
- To collect data and forecast on the demand and use of electricity
- To require licensees to formulate perspective plans
- To regulate assets, properties and interest in properties related to the electricity industry in the State
- To lay down a uniform system of accounts among the licensees.



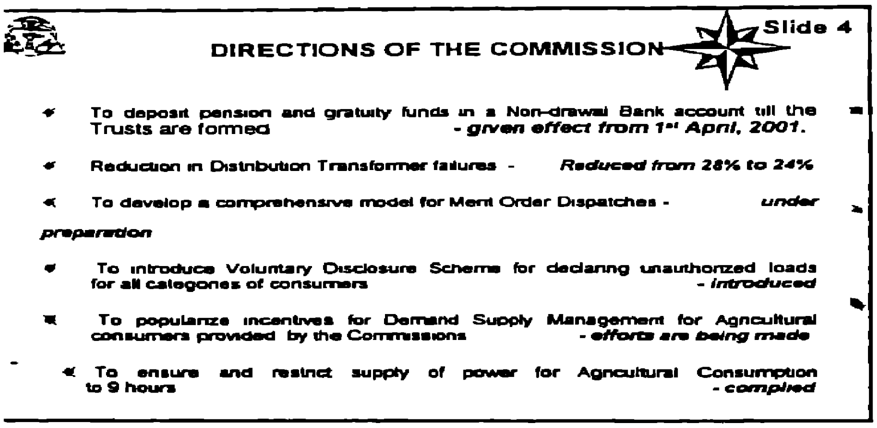
IMMEDIATE TASKS BEFORE THE COMMISSION

- Improve operational efficiency
- Move towards compensatory tariffs.
- Reduce T&D Losses.
- Make the Licensee financially viable.
- Reduce the cost of supply of power.
- Minimise cross-subsidy.
- Reduce external subsidy.
- Improving the quality of supply to consumers
- Metering of Agriculture Consumption



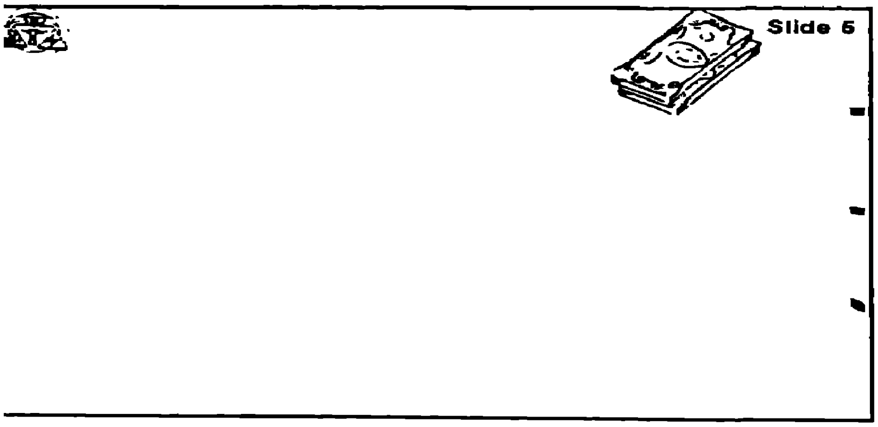
DIRECTIONS OF THE COMMISSION

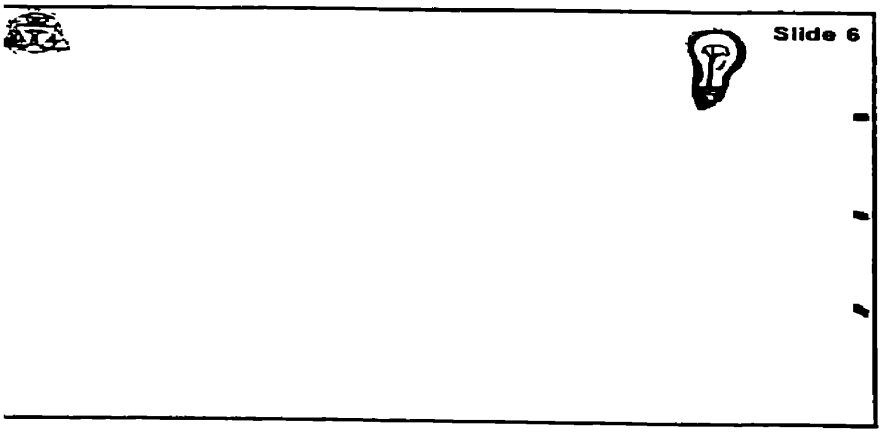
- Monthly *release of subsidy committed* by Government in cash as against adjustments earlier *- complied fully*
- Estimation of Agricultural Consumption by carrying out census of Agricultural Pumpsets *- Completion expected by Nov.2002*
- Regularisation of Domestic / Agriculture unauthorized connections - *18.87 lakh Domestic and 2.57 lakh agricultural connections have been regularized.*
- Metering *of all* interface points where the ownership changes with 0 2 class meters *- complied between all generating stations APTRANSCO have* been provided *with 0 2 class meters Balance complied with 0.5 class meters*
- To fix meters on LT side of Transformers exclusively serving agriculture *complied – 22,773 meters fixed.*
- Replacement of meters by high quality electronic meters 18,13,144 meters have been installed. This *has helped* increase metered sales.

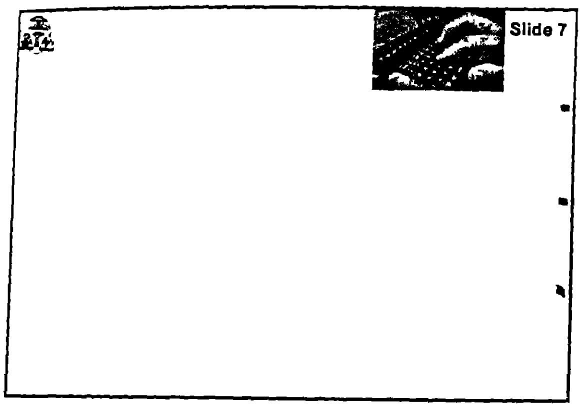


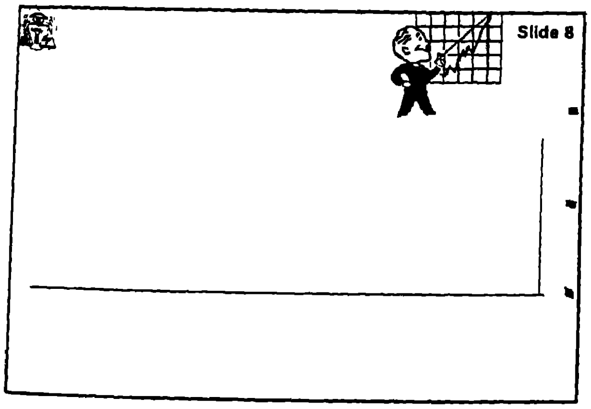
DIRECTIONS OF THE COMMISSION

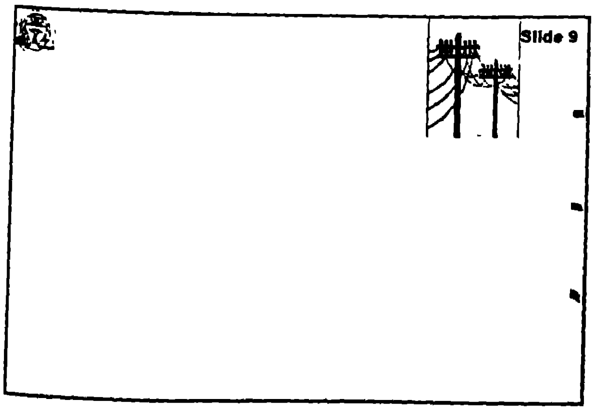
- To deposit pension and gratuity funds in a Non-drawal Bank account till the Trusts are formed - *given effect from 1^{st} April, 2001.*
- Reduction in Distribution Transformer failures - *Reduced from 28% to 24%*
- To develop a comprehensive model for Merit Order Dispatches - *under preparation*
- To introduce Voluntary Disclosure Scheme for declaring unauthorized loads for all categories of consumers - *introduced*
- To popularize incentives for Demand Supply Management for Agricultural consumers provided by the Commissions - *efforts are being made*
- To ensure and restrict supply of power for Agricultural Consumption to 9 hours - *complied*











THANK YOU !

S K Sarkar
Senior Fellow
TERI
Habitat Place, Lodi Road, New Delhi - 110 003
Fax 91-11-4682144, 4682145
Tel 91-11-4682100, 4682111
E-mail: sksarkar@teri.res.in
Web www.teriin.org

A Doctorate in Economics from the State University of New York, Dr S K Sarkar has been in the TERI (Tata Energy Research Institute), New Delhi, since 1998, and is working as Senior Fellow in the Division for Regulatory Studies and Governance as well as in the Policy Analysis Division of the Institute..

Before joining TERI, Dr Sarkar served Department of Economic Affairs in the Ministry of Finance, Government of India (1994-97), and the Ministry of Personnel, Government of India (1992-94) and Government of West Bengal on various capacities (1981-1992). In the Regulatory policy reform area, Dr Sarkar has worked on various projects concerning energy reforms, urban infrastructure, natural resources management, and regulatory policy issues in India, Vietnam, Philippines, and other South Asian Countries. He is actively involved in the capacity building work of the South Asia Forum for Infrastructure Regulation (SAFIR), a Forum assisted by the World Bank/PPIAF.

Dr Sarkar has got several publications to his credit in national dailies, journals (national and international), and in the form of mimeographs. He has edited a book captioned" SAFIR Regulatory Strategy (2001), *co-edited two books-* ("Transition to liberalized environment- experiences and issues" (1999), "Regulation in infrastructure services- progress and way forward" (2001), and co-*authored one book* " Framework for infrastructure regulation (2000). His another book " Reforms in infrastructure sectors: next steps" is being published soon. He is the editor of SAFIR Newsletter on regulatory issues, and is also a member of the Editorial Board of Regulateri, a TERI publication on quarterly regulatory developments.

He heads the Centre for Regulatory and Policy Research of the TERI School of Advanced studies, New Delhi, a Deemed University, and also teaches a course on *Infrastructure Economics* for the Ph D students in the University.

He has been a faculty and has submitted papers in several conferences. He has also organized several training programmes in India and abroad.

Restructuring in water sector: India's experience on PSP

S K Sarkar, Ph.D
TERI

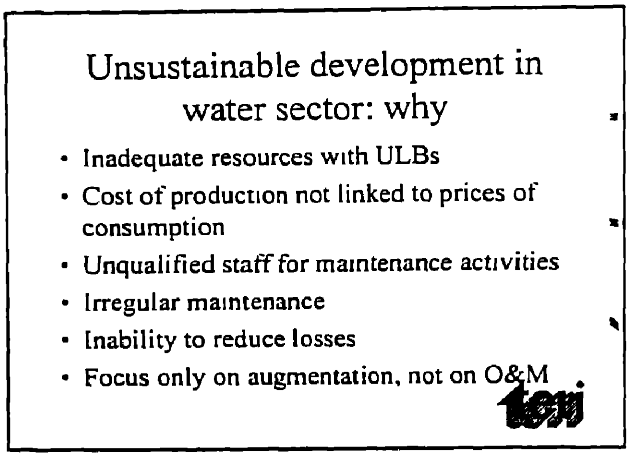
Goa, September 20, 2002

Outline

- Water sector in urban India
- Examples of PSP
- Lessons

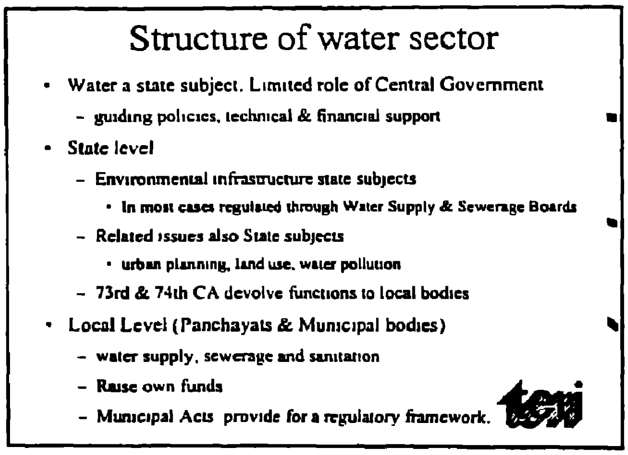
Water supply: status in India

- Accessibility
  - Urban 81-90%
  - About 40% urban access within 0.5 km
- Supply
  - urban areas 165-50lpcd
  - urban slum 27 lpcd
  - No 24 hour service
- Loss; UAF: 20-40%
- Low investment in urban areas
  - Need $21.4 billion (1995-2006)



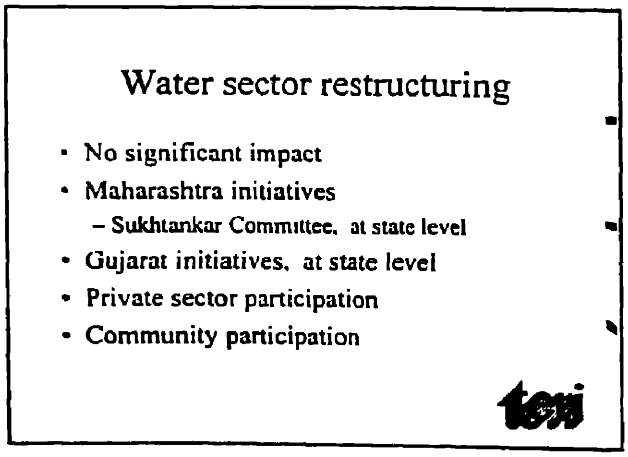
Unsustainable development in water sector: why

- Inadequate resources with ULBs
- Cost of production not linked to prices of consumption
- Unqualified staff for maintenance activities
- Irregular maintenance
- Inability to reduce losses
- Focus only on augmentation, not on O&M



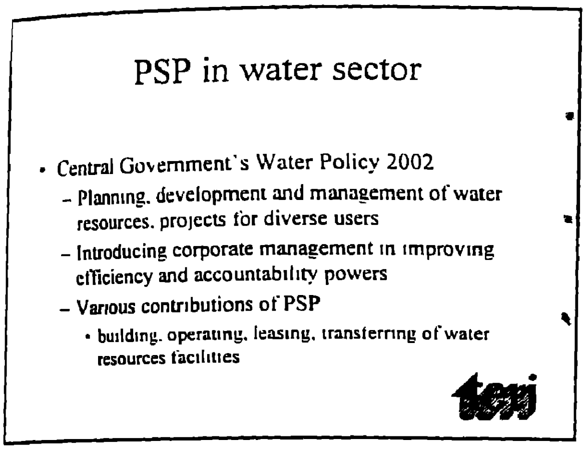
Structure of water sector

- Water a state subject. Limited role of Central Government
  - guiding policies, technical & financial support
- State level
  - Environmental infrastructure state subjects
    - In most cases regulated through Water Supply & Sewerage Boards
  - Related issues also State subjects
    - urban planning, land use, water pollution
  - 73rd & 74th CA devolve functions to local bodies
- Local Level (Panchayats & Municipal bodies)
  - water supply, sewerage and sanitation
  - Raise own funds
  - Municipal Acts provide for a regulatory framework.



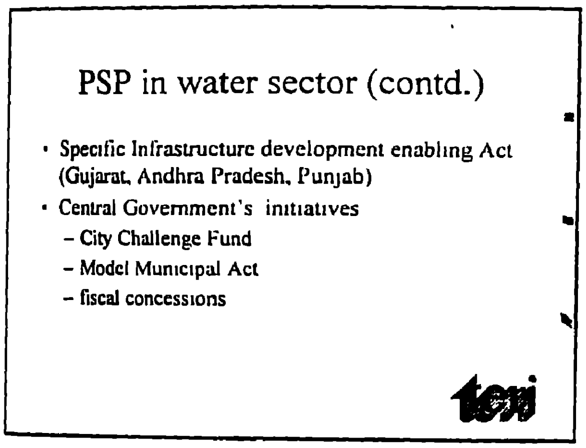
Water sector restructuring

- No significant impact
- Maharashtra initiatives
  - Sukhtankar Committee, at state level
- Gujarat initiatives, at state level
- Private sector participation
- Community participation



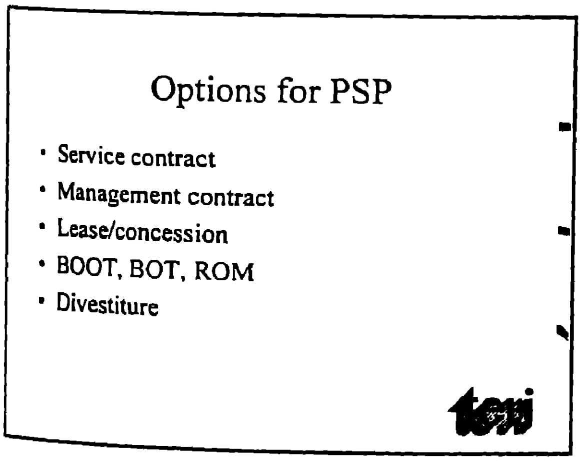
PSP in water sector

- Central Government's Water Policy 2002
  - Planning, development and management of water resources, projects for diverse users
  - Introducing corporate management in improving efficiency and accountability powers
  - Various contributions of PSP
    - building, operating, leasing, transferring of water resources facilities



PSP in water sector (contd.)

- Specific Infrastructure development enabling Act (Gujarat, Andhra Pradesh, Punjab)
- Central Government's initiatives
  - City Challenge Fund
  - Model Municipal Act
  - fiscal concessions



Options for PSP

- Service contract
- Management contract
- Lease/concession
- BOOT, BOT, ROM
- Divestiture

PSP and objectives

PSP in water sector

PSP in Chennai

- Production and treatment
  - O&M of 29 borewells to private operators
  - energy costs by Board, personnel by the operator
  - 56 % savings in costs
- Distribution of water through tankers (1987)
  - 25 mld
  - water tanker services contracted out
  - savings, cost of hiring going down by 18%

PSP in Ajmer, Rajasthan

- Management contract for O&M for filtration plant, pipelines, pumping stations of water scheme from Bilashpur dam
- Reasons for PSP
  - ban on new recruitment
  - need for sophisticated equipment, requiring trained staff; no staff from PHED
- How
  - 112 Km pipelines by Pahana Construction co
  - Two pvt firms to cover 5 pumping stations/filtration plant
  - PHED staff supervises

PSP in Ajmer: Performance monitoring

- Contractor obligations
  - acquiring tools, equipment at own cost
  - provisioning of staff for repair & emergency works
  - adequate safety of equipment
- PHED staff
  - payment for annual O&M costs
  - initial costs of spares/repairs
  - installing wireless for communications
- Penalties
  - for pumping stations, pipelines

PSP in Ajmer: benefits

- Repair time reduced, enhancing consumer satisfaction
- Contractors get 20% of total spare costs as overheads/margin
- Savings to government (by 44%)
- Monetary savings due to efficiency gains
- Difficulties
  - technical
  - labour
  - collusion

Lessons from PSP in Ajmer

- Change of role definition of state level agency
- need for well designed contract
- need for further revision of contract design
- need for market arrangements, availability of private operators, willingness of government agency for privatisation

PSP in Tripur

- 1980-Tripur Exporter Association (TEA) demanded for better services
- 1991-Government launched TADP for infrastructural requirements
- 1992-93- IL&FS agreed to provide long term funds
- 1993-94, WB/USAID committed to fund
- 1994 (August) SPV called NTADCL formed
- 2001-02 Financial closure

Tripur Project - contd.

- establishment of bulk water system , distribution to bulk consumers, Tripur municipality, four villages en route
- water distribution system to store, and distribute treated water to domestic and industrial consumers within TM
- sewage collection, treatment, and disposal system in TM
- 30 year concession under BOOT
- 80 % water to industrial units
- tariff
  - Rs 5 per KL to household
  - Rs 45 to industry at 2001 prices
  - yearly price escalation at 6 5 %

Tripur project- contd.

- Pre-bid exercise for selection of EPC and O&M took one year
- Selection of contractors for another one and half year
- September 1998 consortium selected
  - Mohindra & Mahindra
  - Larsen and Tarbo
  - Bechtel Enterprises, US
  - United Utilities, UK
- Bechtel to carry water from Bhavni river to main balancing reservoir
- M&M and L&T jointly construction from balancing reservoir to distribution works
- NTADCL and United utilities , a joint venture will manage the O&M for 30 years

Tripur project - contd.

- Appraised by IDBI in 1999
- project costs Rs 11 63 billion
  - Rs 6 98 billion debt
  - Rs 3 9 billion equity
  - Rs 0.75 billion subordinated debt
  - return on equity 21 percent
  - cost to debt 17 percent
- Equity by
  - GOI, ILF&S, TN Govt, TEA, Mahindra-Bechtel consortium
- Debt by
  - IDBI, IDFC, SIDBI
  - Indian Banks (5)
  - WB, USAID

Tripur project - contd.

- Tripur first commercial project, and had concerns resulting in delayed commencement
  - how to structure & appraise
  - Some banks did not have mandate to fund water project (BOB), a special case
  - FIs hesitant because of project's long duration
  - success of project depends on dynamics of knitware industry: various concerns
  - reliability of water source- Cauvery river

Tripur project-contd.

- Regulatory framework
  - Tariff formula in CA, Charge Review Committee for periodic changes, and contingencies- appointed by NTADCL, comprising of reps from Concessainairre, TN Govt, and presided over by Independent Judge
  - Regulation of service standards
    - Independent engineer
    - Independent auditor
    - IE & IA to be paid by NTADCL

Lessons from Tripur

- Can it be replicated elsewhere?
- Bottom up approach: demand driven
- detailed feasibility studies by competent agencies
- Need for regulatory oversight over long term contract
- adequate rate of return

PSP in Pune

- In April 1996, pre feasibility report- master plan to supply 24 hrs, 100 % accessibility, 100 % sewage collection, water recycling for irrigation purposes
- March 1997, HPC on Infrastructure, Govt of Maharashtra(GOM) approves the proposed management contract project in Pune Municipal corporation
- March 9, 1998, GOM Cabinet approves the project
- March 31, 1998 RFP issued
- April 1998 National elections; change of political alliance at local level, Commissioner transferred
- May 30, 1998. Pre bid conference
- June, 1998 Date of submission extended
- October 7, 1998 Project cancelled

Lessons from PSP in Pune

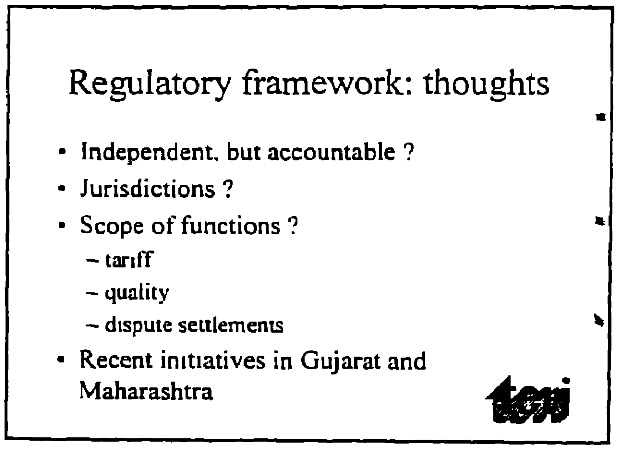
- Credible and consistent commitment at high levels
  - capacity building at all levels
- structured, continuous, and focussed consultation process
- independent authority for regulatory oversight

PSP is shying away in India due to lack of ….

- Clarity in scope and framework for PSP
- Quality support and funding for project development
- Rigor in project development
- Weak process management and political commitment
- Champion
- Private sector capacity and procurement process
- Policy support
- Participation of stakeholders

So we need...

- Credible and consistent Political commitment: enabling legislation
- sector reform
  - Preparation of information base
  - Pilot projects, phased approach ?
  - Phased implementation of reforms, restructuring, independent regulation
  - Transparency in process
  - Incentivisation of Reforms
  - Tariff reform
  - financing reform initiatives
- Capacity building
- Focused consensus building



Regulatory framework: thoughts

- Independent, but accountable ?
- Jurisdictions ?
- Scope of functions ?
  - tariff
  - quality
  - dispute settlements
- Recent initiatives in Gujarat and Maharashtra

Thank you

REGULATORY SYSTEM FOR INDIAN OIL INDUSTRY

(A CASE STUDY)

By Shri **Devi Dayal**, IAS (Retd.)
Former Addl. Secretary, MOP&NG & Secretary, Banking, Govt. of India

NEED FOR INDEPENDENT REGULATOR

- ADVANCEMENT OF SCIENCE AND TECHNOLOGY COMMUNICATION DISPERSAL OF RESOURCES AND EFFECTIVE INTERPLAY OF ECONOMIC FACTORS HAVE HEIGHTENED DEMAND FOR EFFICIENCY COMPETITION ECONOMY AND PROFITS FOR BUSINESS ENTERPRISES
- GLOBALISATION FACILITATED BY ABOVE FACTORS AND TRANSFER OF LABOUR SKILLS CAPITAL AND TECHNOLOGY
- LIBERALISATION DEREGULATION AND PRIVATISATION CONSEQUENCES OF GLOBALISATION
- NEW SCENARIO - GOVERNMENT ENTITIES AND PRIVATE COMPANIES BOTH COMPETING IN SAME ACTIVITY

CONTD...

- GOVERNMENT PRESENCE TO CONTINUE TO ENSURE REAL COMPETITION AND PROTECTION OF CONSUMER INTEREST AND FOR SECURITY OF SUPPLY
- CONFLICTING INTERESTS OF GOVERNMENT EXISTING COMPANIES. NEW ENTRANTS AND CONSUMER
- TO FACILITATE TRANSITION FROM CONTROLLED TO DEREGULATED REGIME AND RESOLVE CONFLICTS INDEPENDENT INTERMEDIATING REGULATORY AUTHORITY NEEDED
- GOVERNMENT TO REMAIN AN INTERESTED PARTY - NOT POSSIBLE TO BE FREE FROM PULLS AND PRESSURES, BOUND TO BE SLOW AND DIFFUSED IN FOCUS
- SO INDEPENDENT EFFECTIVE AND NON-GOVERNMENT CONTROLLED REGULATOR NECESSARY

CONTD...

PETROLEUM SECTOR IN INDIA

- TILL EARLY 1990s PETROLEUM SECTOR FULLY CONTROLLED BY GOVERNMENT
- EXPLORATION AND PRODUCTION OF CRUDE AND GAS MAINLY BY TWO NATIONAL OIL COMPANIES (NOCs)
- EXPLORATION BLOCKS GIVEN ON NOMINATION BASIS TO NOCs
- REFINING ONLY BY GOVERNMENT OIL COMPANIES
- MARKETING ALSO CONTROLLED BY FOUR GOVERNMENT MARKETING COMPANIES EXCEPT LIMITED TRADE IN LUBRICANTS AND WAX BY PRIVATE COMPANIES

STARTING 1998-99

- COST PLUS PRICING FOR PRODUCERS AND MARKETEERS AND COST-SUBSIDISED PRICE FOR CONSUMER UNDER ADMINISTERED PRICING MECHANISM (APM)
- APM CARRIED THROUGH SELF BALANCING OIL POOL ACCOUNT
- NOW WHOLE PETROLEUM SECTOR OPENED UP FOR PRIVATE INVESTMENT AND PARTICIPATION
- UNDER NEW EXPLORATION LICENSING POLICY (NELP) EXPLORATION BLOCKS TO BE GIVEN UNDER OPEN BIDDING ON NON-DISCRIMINATORY BASIS
- REFINING OPENED FOR 100% PRIVATE FOREIGN INVESTMENT
- MARKETING FOR ALL PRODUCTS EXCEPT TRANSPORTATION FUELS FULLY OPENED UP

- MARKETING OF TRANSPORTATION FUELS ALSO ALLOWED TO COMPANIES INVESTING RS 2000 CRORES IN REFINING INFRASTRUCTURE OR PRODUCING 3 M TON CRUDE / GAS ANNUALLY
- BUT OIL SECTOR YET NOT FULLY COMPETITIVE AND NOT ATTRACTING REQUIRED PRIVATE INVESTMENT
- FOR BETTER CONFIDENCE OF INVESTOR AND EFFECTIVE DISPENSATION AS WELL FOR CONSUMER PROTECTION INDEPENDENT OIL REGULATOR CONSIDERED NECESSARY
- INVESTMENT TO FOLLOW IF REGULATOR DISCHARGED ITS FUNCTIONS SATISFACTORILY

CONTD...

OBJECTIVES AND FEATURES OF A MODEL REGULATORY AUTHORITY

- PROMOTING EFFICIENCY COMPETITION ECNOMY AND THEREBY INVESTMENT CONSUMER PROTECTION REGULATION OF TARIFF AND QUALITY IN AN EFFICIENT AND TRANSPARENT MANNER
- ENTRY AND EXIT NORMS TO BE SMOOTH AND REASONABLE
- EXISTING AND LARGE PLAYERS NOT TO CHOKE OFF NEW ENTRANTS AND SMALL PLAYERS
- RULES OF OPERATION TO BE EVOLVED BY FELT NEEDS AND SOUND PRINCIPLES AFTER DUE CONSULTATION
- COMPETITION BY PREVENTING MONOPOLISTIC HOLD CARTELISATION ENSURED BY CONSUMER CHOICE

- CONSUMER WANTS SECURE ACCESS TO FUEL OF RIGHT QUALITY AND QUANTITY IN NOMRLA REACH AT COMPETITIVE PRICE AND GOOD CUSTOMER CARE
- CHOICE INFORMATION AND GRIEVANCE REDRESSAL TO CONSUMER
- DEAL FIRMLY WITH UNDUE DEMANDS AND PRESSURES FROM PUBLIC SECTOR, PRIVATE COMPANIES AND ALL OTHER PARTIES
- MANY FUNCTIONS LEGATED FROM OIL CO-ORDINATION COMMITTEE TO BE PERFORMED
- ENSURE LEAST COST TO ECONOMY & FAST GROWTH
- COMMON USAGE RIGHT FOR PIPELINE AND INFRASTRUCTURE

CONTD...

- AUTHORITY TO BE INDEPENDENT TRANSPARENT NON-DISCRIMINATORY AND SWIFT IN ACTION
- SUCCESS DEPENDS ON FAVOURABLE PUBLIC OPINION PUBLIC AND INVESTOR CONFIDENCE
- JUDGEMENTAND DISPENSATION TO BE PREDICTABLE AS PER POLICY
- ENSURE SUPPLY OF PETROLEUM PRODUCTS IN REMOTE AND DIFFICULT AREAS
- POWER TO ALLOW TAKE OVER OF FACILITIES AND OPERATION BY ANOTHER AGENCY INCASE OF STRIKE, NATURAL CALAMITIES OR PUBLIC INTEREST
- SPEED IMPORTANT REQUIREMENT FOR PROMOTING INVESTMENT AND REDRESS GRIEVANCES

CONTD...

- AUTHORITY TO BE MULTI PERSON - DIVERSE EXPERIENCE
- FINANCIAL CONTROL AND FUNDING NOT LEFT TO GOVERNMENT DISCRETION
- LICENSING TO NEW ENTRANTS TO BE PROVIDED BY REGULATOR
- POWER TO ENFORCE DECISIONS AND PUNISH
- INDEPENDENT OF GOVERNMENT CONTROLLED BUT ACCOUNTABLE TO PARLIAMENT - ENOUGH CONSULTATION
- REGULATORY AUTHORITY - A PERMANENT REQUIREMENT

CONTD...

UPSTREAM REGULATORY AUTHORITY - INDIA

- DECISION - TWO REGULATORY AUTHORITIES ONE FOR UPSTREAM AND ANOTHER FOR DOWNSTREAM SECTOR INCLUDING TRANSPORTATION OF PETROLEUM PRODUCTS AND MARKETING OF GAS
- ◆ **DIRECTORATE GENERAL OF HYDROCARBONS (DGH)**
- VARIOUS COMMITTEES RECOMMENDED SETTING UP EMPOWERED AGENCY TO MONITOR AND SUPERVISE EXPLORATION AND PRODUCTION BY COMPANIES AND ADVISE GOVERNMENT ON TECHNICAL MATTERS AND ASSIST IN OFFERING OF EXPLORATORY BLOCKS
- DGH UNDER ADMINISTRATIVE CONTROLL OF MINISTRY OF PETROLEUM & NATURAL GAS CREATED BY A RESOLUTION DATED 8TH APRIL 1993

- DGH DOES NOT ENJOY STATUTORY STATUS OR INDEPENDENT POWERS ONLY DELIGATED POWERS
- NO STATUTORY POWER TO CALL OBTAIN FOR INFORATION AND DATA FROM COMPANIES
- NO POWER TO ISSUE TECHNICAL AND OPERATIONAL DIRECTIVES TO COMPANIES
- NO INDEPENDENT CADRE OF PERSONNEL OR REMUNERATION FREEDOM
- IN-PRINCIPLE APPROVAL OF CABINET OBTAINED IN 1997 FOR SETTING UP INDEPDENT REGULATORY BODY FOR UPSTREAM PETROLEUM SECTOR THROUGH AN ACT OF PARLIAMENT
- FUNCTIONS - ADVISE GOVERNMENT ON ALL TECHNICAL MATTERS HELP OFFERING EXPLORATION BLOCKS CARRY OUT SURVEYS AND INFORMATION DRILLING ISSUE DIRECTIVES AND GUIDELINES TO OPERATORS FOR OPTIMAL EXPLOITATION OF RESERVES AND CARRY OUT RESEARCH AND STUDY IN UPSTREAM SECTOR

CONTD...

- NO PROGRESS SO FAR ON ABOVE CABINET DECISION
- SUGGESTION FOR EMPOWERING DGH TO FUNCTION AS FULL-FLEDGED REGULATOR NOT ACCEPTED
- CONFUSION AND IN-ACTION BY GOVERNMENT ON UPSTREAM REGULATORY AUTHORITY
- ASIAN COUNTRIES - UPSTREAM REGULATION MOSTLY BY GOVERNMENT AGENCIES
- WESTERN COUNTRIES - MIXED ARRANGEMENT

CONTD_

REGULATORY AUTHORITY FOR DOWNSTREAM OIL SECTOR IN INDIA

- VARIOUS COMMITTEES RECOMMENDED ONE REGULATORY AUTHORITY FOR WHOLE OF DOWNSTREAM SECTOR INCLUDING GAS
- AFTER DEREGULATION NECESSARY TO CONTROL THE ENTRY OF NEW OPERATORS AND OPEATION OF ALL OPERATORS TO ENSURE CONSUMER PROTECTION PROMOTE NEW INVESTMENT AND HEALTHY GROWTH OF SECTOR
- REGULATOR TO OVERSEE REFINING PROCESSING STORAGE TRANSPORTATION DISTRIBUTION MARKETING AND SALE OF PETROLEUM PRODUCTS INCLUDING PIPELINES LNG TERMINALS, CNG, ETC
- DRAFT PROPOSAL ON DOWNSTREAM REGULATORY FRAMEWORK EXCLUDING NATURAL GAS PREPARED BY TERI - CIRCULATED AMONG MINITRIES IN EARLY 1999

- SUGGESTIONS FOR SINGLE ENTITY FOR WHOLE SECTOR NOT FOUND FEASIBLE
- "INDIAN HYDROCARBON VISION - 2025" REPORT RECOMMENDED COMMON REGULATORY MECHANISM FOR DOWNSTREAM SECTOR AND NATURAL GAS
- MANY MEETINGS HELD GOVERNMENT DECISION FOR SINGLE DOWNSTREAM REGULATORY AUTHORITY AS ABOVE
- PETROLEUM REGULATORY BOARD BILL 2002 INTRODUCED IN PARLIAMENT ON 8TH MAY 2002
- BILL REFERRED TO PARLIAMENTARY STANDING COMMITTEE FOR MINISTRY OF PETROLEUM & NATURAL GAS
- BILL ALSO DISENDED WITH PARLIAMENT CONSULTATIVE COMMITTEE

CONTD_

- **FEATURES AND PROVISIONS**

- REGULATORY BOARD - INDEPENDENT AUTONOMOUS AND STATUTORY BODY
- GRANT MARKETING RIGHTS FOR NOTIFIED PETROLEUM PRODUCTS
- PERMISSION FOR ESTBALISHING LNG TERMINALS
- REGULATE TRANSPORTATION OF PETROLEUM PRODUCTS INCLUDING GAS & SETTING UP AND OPERATION PIPELINES
- PIPELINE TO BE COMMON CARRIER - NOTIFY
- TO PROMOTE FAIR TRADE AND COMPETITION
- MARKETING NETWORK IN REMOTE AND DIFFICULT AREAS
- ENSURE RETAIL SERVICE AND MARKETING SERVICE OBLIGATION
- PREVENT PROFITEERING BY VARIOUS PLAYERS
- FIXED TRANSPORTATION RATE FOR COMMON CARRIER

- PRB TO CONSIST OF CHAIRMAN AND FOUR MEMBERS OF EMINENCE IN SPECIFIED FIELDS
- GOVERNMENT TO GIVE GRANT FOR RUNNING THE BOARD - ALSO INDEPENDENT FUND
- GOVERNMENT TO MAKE RULES AND BOARD TO MAKE REGULATIONS FOR ALL OPERATIONAL MATTERS
- DIRECTIVES TO BE IMPLEMENTED AS DECREE OF CIVIL COURT
- POWER TO IMPOSE PENALTY UPTO RS 1 00 LAKH FOR EACH CONTRAVENTION
- ON COMPLAINT COURT CAN IMPOSE FINE FROM RS 1 00 LAKH TO RS 10 00 LAKHS AND ALSO IMPRISONMENT FROM 3 TO 5 YEARS FOR VIOLATION OF DIRECTIONS ETC

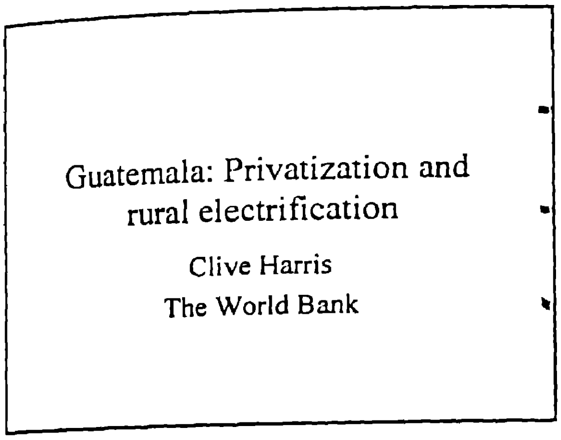
CONTD...

- APPLICABILITY OF CODE OF CIVIL PROCEDURE FOR HEARING DISPUTES
- ENTER - ENTITY DISPUTE SETTLEMENT THROUGH SPECIFIC PROCEDURE
- GOVERNMENT POWER TO ISSUE DIRECTIONS IN THE INTEREST OF SOVEREIGNTY AND INTEGRITY OF INDIA OR PUBLIC ORDER
- POWER TO GIVE POLICY DIRECTIONS - CONSULTATION WITH P R B
- POWER TO TAKE OVER MARKETING NETWORK / INFRASTRUCTURE IN EXCEPTIONAL CIRCUMSTANCES
- AUDIT BY COMPTROLLER AND AUDITOR GENERAL OF INDIA AND ANNUAL REPORT TO PARLIAMENT
- SOME TRANSITORY PROVISIONS

CONTD...

PRESENT STATUS

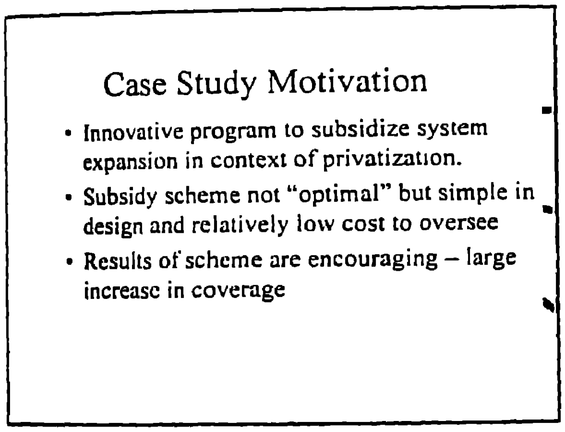
- BILL PENDING BEFORE STANDING COMMITTEE OF PARLIAMENT
- PROCESS LONG DRAWN
- COMMITTEE INVITED SUGGESTIONS FROM ALL CONCERNED AND PUBLIC
- MEMBERS DIFFERENT VIEWS - ALSO LOBBYING BY INTERESTING PARTIES
- LIKELY TO TAKE TIME



Guatemala: Privatization and rural electrification

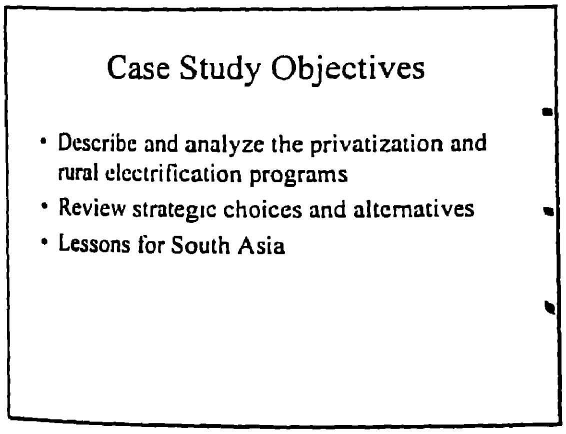
Clive Harris

The World Bank



Case Study Motivation

- Innovative program to subsidize system expansion in context of privatization.
- Subsidy scheme not "optimal" but simple in design and relatively low cost to oversee
- Results of scheme are encouraging – large increase in coverage



Case Study Objectives

- Describe and analyze the privatization and rural electrification programs
- Review strategic choices and alternatives
- Lessons for South Asia

Overview of Guatemala

- Located in Central America, south of Mexico
- Total population – 11 4 mn. 60% in rural areas Large % are indigenous
- Per capita income $1600 but very uneven distribution
- Damaging civil war ended with 1996 Peace Accords, impetus for reform and bringing basic infrastructure services to all areas of the country

Overview of the Power Sector

In 2001

- Generation 5825 GWh, of which 43% hydro, 57% thermal
- Peak Demand 1074 MW, capacity 1600 MW
- Total sales c 5200 GWh
- 1 7 mn consumers
- Loss levels low cf South Asia
- Illegal connections also less of a problem – major drive for regularization contributed to increase in connections of 200,000 outside of rural electrification plan

Structure of sector pre-reform

- INDE (state-owned) generation (mostly hydro), transmission, distribution outside of main urban area
- EEGSA distribution in main urban area (capital city plus surrounding regions) – c 50% of total sales
- Municipal distribution companies accounted for c. 10% of sales
- IPPs contracted to EEGSA, c 30% capacity

Sequence of reform in sector

- 1996 – General Electricity Law passed: vertical unbundling, created regulatory body (CNEE), wholesale market
- 1998 – EEGSA fully privatized, bought by consortium lead by Iberdrola
- 1998 – INDE distribution split into 2 companies (DEOCSA/DEORSA), privatized in late 1998, both bought by Union Fenosa

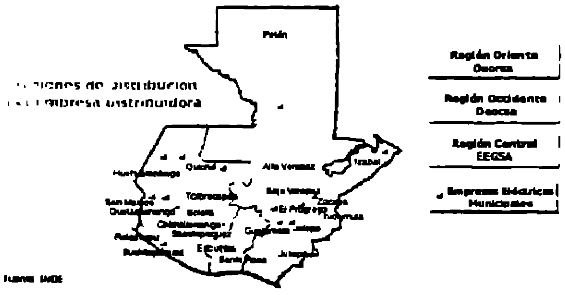
Post reform: role of institutions

- Ministry of Energy and Mines is policy-making body: develops regulations, policies for setting tariffs
- CNEE – regulatory body: 3 members. Housed within MEM but has some safeguards (removal of members). Responsible for setting tariffs following methodology in law, dispute resolution, monitor performance of regulated entities

Post reform: sector structure

- Public ownership: municipal distribution (c 10%), hydro generation, transmission
- Private: under 50 year concession: distribution apart from municipal company areas, IPPs
- Market structure: retail competition for consumers above 100kW

Distribution



Fuente: INDE

Tariff Regulation

- Tariffs for regulated consumers reviewed every 5 years
- Tariffs = G + T + Distribution margin
- Generation – average cost of contracts and spot market purchases
- Transmission – regulated use of system charges
- Distribution – cost of "efficient" company (investment on replacement cost, return between 7-13%)

What has happened with tariffs?

- IPP contracts contained indexation of prices to world fuel price levels – lead to 50-80% increase 1998-2001
- Govt introduced "social" tariff
- Originally for residential consumers using <500 kWh/m, financed directly from budget
- Now for residential consumers using < 300 kWh/m, financed by "below market price" contracts from INDE generation (2.6 c/kWh vs 7.4 c/kWh)

Tariff Levels

- Regular tariff 11 – 17 c/kWh depending on company
- Social tariff – c 7 6 c/kWh
- Social tariff applies to 80% rural households, DEOCSA and DEORSA sell 55% energy at social tariffs
- Regressive as over 50% of poor don't have electricity connection, share of poor in power consumption only around 10%

Overview of rural electrification program

- Privatization of DEOCSA and DEORDA bundled with obligation to implement Rural Electrification Program (PER), covering distribution and transmission
- Distribution: Goal: increase coverage from 64% ('99) to 90% ('04) i.e additional 280,000 connections from '99-'04
- Fixed payment of $650 from govt. to companies for each new residential connection outside 200m franchise zone
- Total cost (T&D) $330 mn

Definitions

- Franchise zone – within 200m of existing network
- Distributors have obligation to connect all consumers within this zone (or those who build line to reach the zone)
- BUT can ask for contribution from consumers – refundable after 5 years
- $650 per connection based on estimated costs from Guatemala and neighbouring countries
- Dispute over whether funds can be used for consumers inside 200m zone

Scheme Mechanics - Funding

- Trust Fund established to retain funds for the PER
- Fund constituted with privatization receipts ($107mn), treasury bonds ($51 mn), balance being sought (including from IDB)
- Technical Committee of Fund (constituted of Ministry, INDE and Union Fenosa companies) approves annual plan and certifies completion of works
- Funds held in Bank of New York

Scheme Implementation

- PER originally established detailed plan for connections – amendments required as list out of date
- UF/Government suggest substitute communities – informal process
- DEOCSA/DEORSA get 20% of cost up-front
- Independent Supervisors, hired by Fund, certify completion, eligibility of connections
- DEOCSA/DEORSA receive remaining 80% following acceptance by CT of Independent Supervisor reports

Results

- Distribution: 130,000 connections made by end 2001. 105,000 connections certified by Independent Supervisors by end '01 (75% target), 12,000 deemed "ineligible" (inside 200m zone), rest waiting for certification
- Transmission: slower implementation with delays in obtaining right of way
- Total new residential connections end '01: 220,000 (includes regularization of illegal connections)
- Electrification index 78% by end 2001

Assessment of PER

- Potential for political interference in plan but no sign of this having influence in practice
- Simplicity of approach and criteria have lead to relatively rapid implementation
- Actual costs of connection not clear: UF claims to make 7% profit
- Poor not explicitly targeted but most new connections seem to be low consumption (40-50 kWh/m)
- Govt. does not appear to have right to penalize UF for non-fulfilment of the connection targets – possible lacuna in contract

Strategic Choices and Alternatives

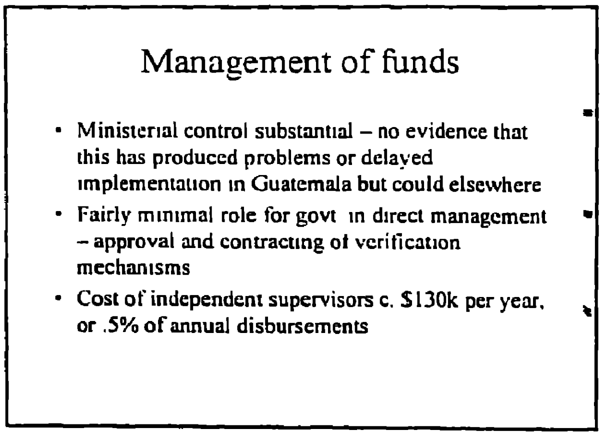
- Competition for funds
- Management of funds
- Targeting/selection of connections
- Structure of connection payment
- User contributions
- Interaction with tariffs for supply
- Interaction with more general obligations to supply

Competition for funds

Competition for funds bundled with competition for buying shares of DEOCSA/DEORSA

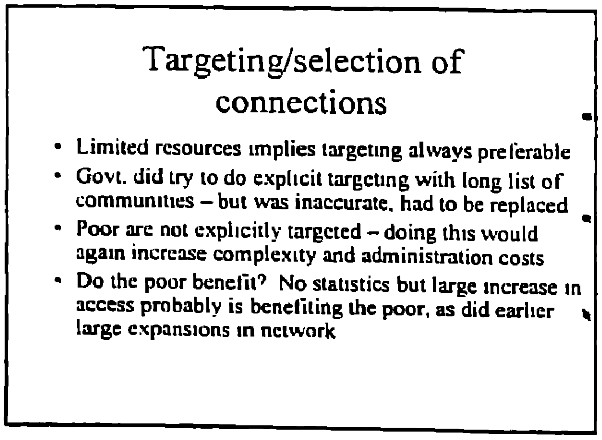
Exclusivity in fund usage to these 2 companies (e g municipal companies, self-help groups excluded)– does this cause problems?

- Evidence suggests large scale program has reduced costs
- Breaking program up and having many competitions would have increased costs and administrative burden – at present nearly all is on DEOCSA/DEORSA



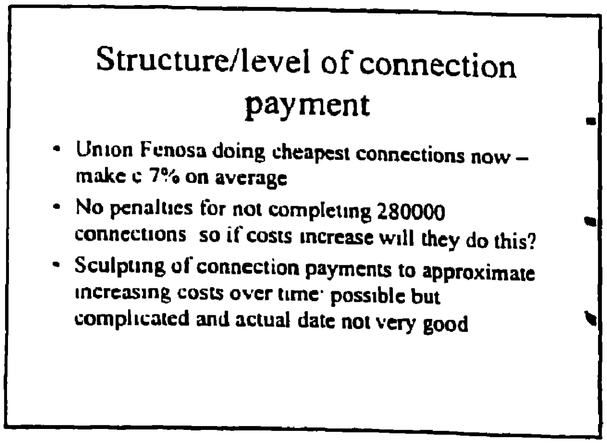
Management of funds

- Ministerial control substantial – no evidence that this has produced problems or delayed implementation in Guatemala but could elsewhere
- Fairly minimal role for govt in direct management – approval and contracting of verification mechanisms
- Cost of independent supervisors c. $130k per year, or .5% of annual disbursements



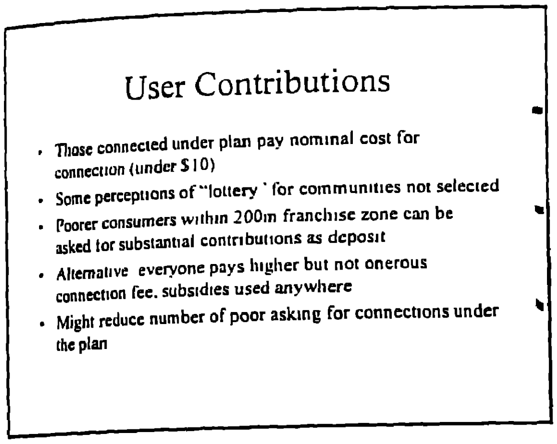
Targeting/selection of connections

- Limited resources implies targeting always preferable
- Govt. did try to do explicit targeting with long list of communities – but was inaccurate, had to be replaced
- Poor are not explicitly targeted – doing this would again increase complexity and administration costs
- Do the poor benefit? No statistics but large increase in access probably is benefiting the poor, as did earlier large expansions in network



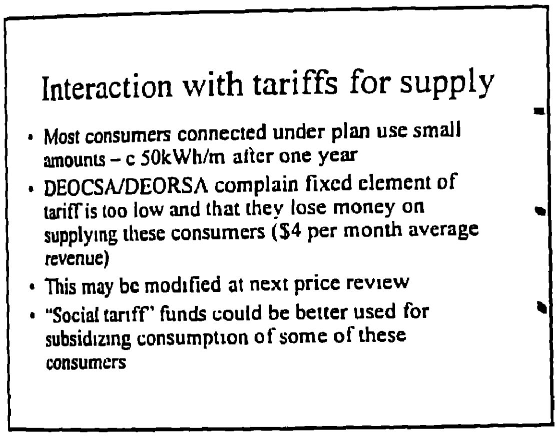
Structure/level of connection payment

- Union Fenosa doing cheapest connections now – make c 7% on average
- No penalties for not completing 280000 connections so if costs increase will they do this?
- Sculpting of connection payments to approximate increasing costs over time: possible but complicated and actual date not very good



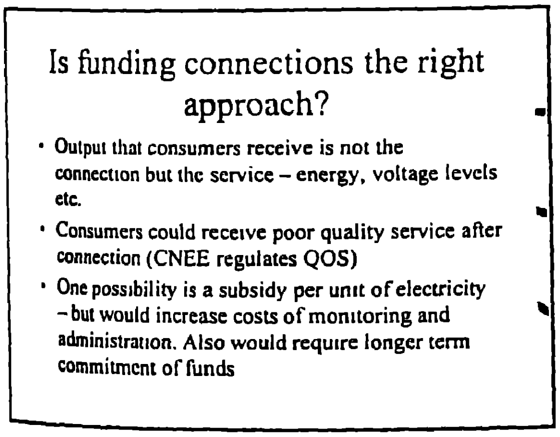
User Contributions

- Those connected under plan pay nominal cost for connection (under $10)
- Some perceptions of "lottery" for communities not selected
- Poorer consumers within 200m franchise zone can be asked for substantial contributions as deposit
- Alternative everyone pays higher but not onerous connection fee. subsidies used anywhere
- Might reduce number of poor asking for connections under the plan



Interaction with tariffs for supply

- Most consumers connected under plan use small amounts – c 50kWh/m after one year
- DEOCSA/DEORSA complain fixed element of tariff is too low and that they lose money on supplying these consumers ($4 per month average revenue)
- This may be modified at next price review
- "Social tariff" funds could be better used for subsidizing consumption of some of these consumers



Is funding connections the right approach?

- Output that consumers receive is not the connection but the service – energy, voltage levels etc.
- Consumers could receive poor quality service after connection (CNEE regulates QOS)
- One possibility is a subsidy per unit of electricity – but would increase costs of monitoring and administration. Also would require longer term commitment of funds

Lessons for South Asia

Positives.

- Guatemala-type scheme can be useful tool in fast network rollout
- Simple objectives, clear targeting/eligibility criteria
- Selection of connections within criteria delegated to companies responsible for implementation
- Transparent monitoring and verification system, dedicated funding system and "apolitical" management

Lessons for South Asia

Cautions

- To be sustainable, companies need to be able to not lose money on supplying energy to consumers connected under program
- Generation and transmission capacity needs to be able to keep up with growth in distribution
- Not directly targeted at the poor
- Would need stronger insulation of fund from political pressures

Universal-Access Policy & Regulation: Lessons from Chile

Rohan Samarajiva
LIRNE.NET
Delft University of Technology

Purpose

- Policy/regulatory aspects, with focus on Chile, drawing from
  - Wellenius, Bjorn, "Closing the Rural Communication Access Gap: Chile, 1995-2002." http://www.infodev.org/library/chile_rural/index.html
  - **wellenius@attglobal.net**
- Collectively connect to South Asian reality

Policy: Define universal-access problem & target

- With regard to fixed telephony only?
- Payphones (with/without PCOs/bureaus)?
- Mobiles?
  - Interaction with fixed/payphones?
- Internet access? Internet "publication"? E-commerce? E-government?

Define problem & target 2

- Static or dynamic?
- National or by region?
- What is within scope of telecom policy/regulatory action, what is not?
- Priorities (e.g., payphones v. mobiles)

Define problem & target 3

- When do we know that we won?
- Static targets
- Rolling benchmarks
- Which benchmarks?
  - South Asia (or subset)
  - Low-income countries
  - Asia
  - Other (e.g , Brazil, S Africa, China, for India)

Interactive exercise I

- Developing universal-access policy
- 15 mts for discussion in work groups
- Use pens and transparencies to report results
- Appoint a spokesperson (not the only exercise, so be arbitrary)

Role of work groups

- Your countries are assigned
- You are senior officials/consultants advising the Minister as she prepares the country's universal-access policy
- Minister
  - has short attention span
  - likes being the best

Tasks for work groups

- Study the South Asian indicators
- Prepare ranked list of three most important universal-access problems for assigned country
  - Develop a justification (3 bullet points)
- Propose a common UA benchmark and alternative (ranked list of two)
  - Develop a justification (3 bullet points)

The Chilean case: Context

Policy action

- Goal: Provide payphones in rural & low-income urban areas lacking access
- Instrument: Telecom Development Fund, financed by national budget
- Means: Subsidies allocated through competitive bids
- Duration: Four years, extended to six
- Admin: Regulator, with council oversight

Annual process

- Regulator collected 1/2 page requests for payphones from local govt bodies, associations, telcos, general public
- Regulator grouped them into projects (20-50 localities
- Conducted private & social cost-benefit analyses
- Projects ranked--social NPV/max. subsidy

Bidding process

- Public competitive bids invited for fundable projects
- Existing/new companies could bid, subject to minimal legal requirements
- Awarded to bidder requiring lowest one-time subsidy

Tender specifications

- Localities to be served
- Conditions of service
- Max. price of within-region calls, with index for increases
- Deadlines
- Payphones available 24/7, for 10 yrs.
- Must start within 6-20 mo.; full subsidy when all payphones in service

Licenses & price regulation

- Winning bidder for each project granted
  - Non-exclusive 30 yr license for payphone plus any additional services included in bid
  - Frequency authorizations processed at same time at no additional cost
  - Within 60 days
- No price regulation except for in-region calls specified in tender; prices to be posted and notified to regulator

Results

Elements of Chilean solution

- No exclusivity in licenses in unserved areas (use it or lose it)
- Effectively target subsidies
- Use competition to ensure entry to unserved markets and efficient supply
- Solve the information problem
- Keep administration costs low

Chilean solution 2

- Local governments and groups involved
- US$6 for each $1 in subsidy
- Subsidies amounted to 0.3% of sector revenues
- Admin. costs around 3% of subsidy

Chilean solution 3

Operational viability

- Subsidy solves problem of getting operators into rural areas
- What about revenues?
  - Termination revenues
  - Origination revenues
  - Other services

Termination revenues

- Recognize telephony is made up of two components
  - Call origination service
  - Call termination service
- CPP privileges call origination
  - Phones with low call origination unattractive
  - Call termination does not yield revenue, but causes costs

Interconnection

- Rural payphones receive as much as 50% incoming calls as they originate
- To reflect use for termination, apply principles of international termination charges to rural areas
  - higher costs in rural areas
  - higher charges for rural termination
- Numbering had to be changed

Chilean termination charges

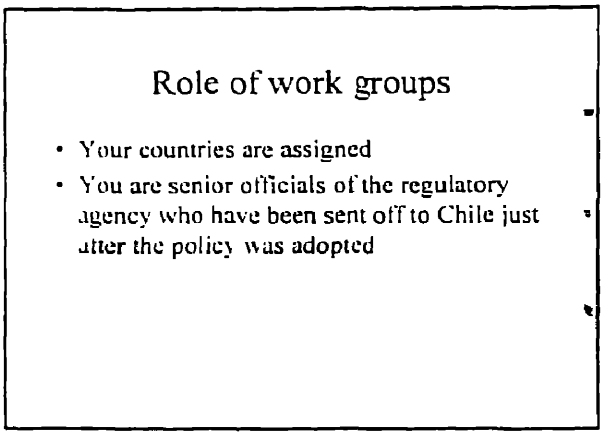
Origination revenues

- Rural people call more
  - Within region calls = Outside region calls
- Within region price regulated (US$ 0.33/3 mts. vs US$ 0.20 in urban areas)
- Long-distance similar after liberalization
- Revenues per payphone
  - US$ 500/yr for small communities
  - US$ 2000/yr for larger communities

Out calls/inhab./mo. by population density

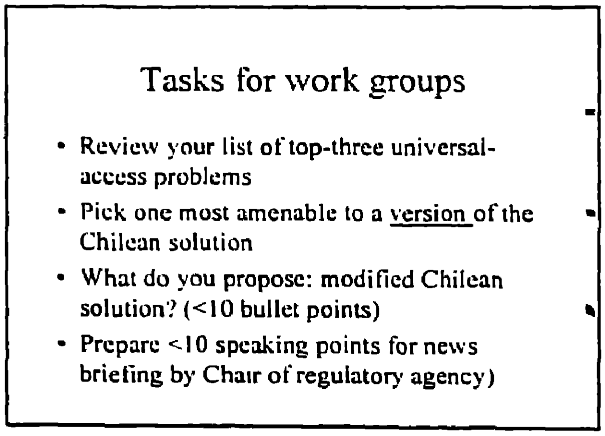
Interactive exercise II

- Implementing universal-access policy
- Lunch plus xx mts for discussion in work groups
- Use pens and transparencies to report results
- Appoint a spokesperson



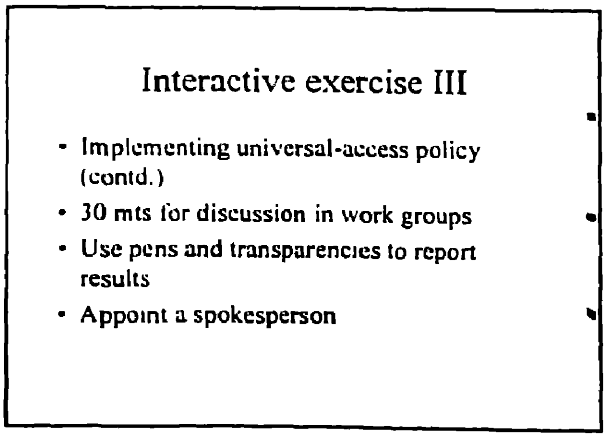
Role of work groups

- Your countries are assigned
- You are senior officials of the regulatory agency who have been sent off to Chile just after the policy was adopted



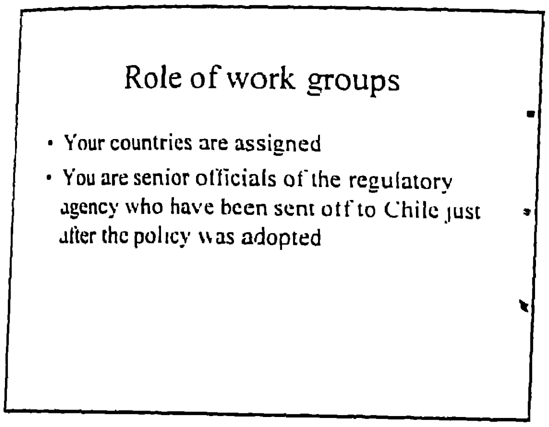
Tasks for work groups

- Review your list of top-three universal-access problems
- Pick one most amenable to a version of the Chilean solution
- What do you propose: modified Chilean solution? (<10 bullet points)
- Prepare <10 speaking points for news briefing by Chair of regulatory agency)



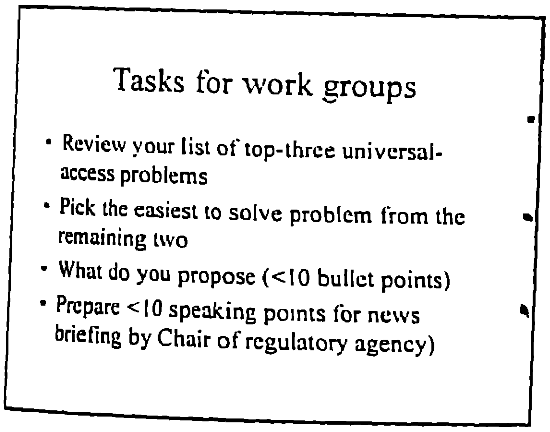
Interactive exercise III

- Implementing universal-access policy (contd.)
- 30 mts for discussion in work groups
- Use pens and transparencies to report results
- Appoint a spokesperson



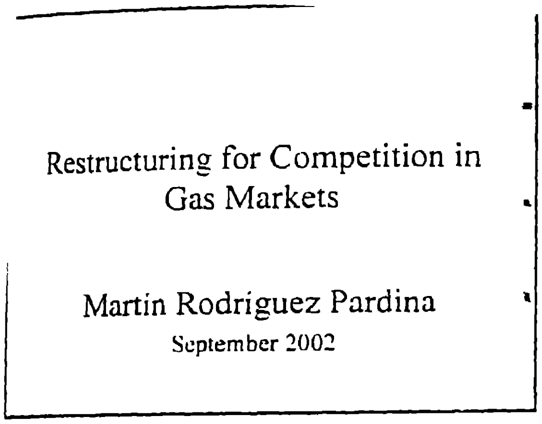
Role of work groups

- Your countries are assigned
- You are senior officials of the regulatory agency who have been sent off to Chile just after the policy was adopted



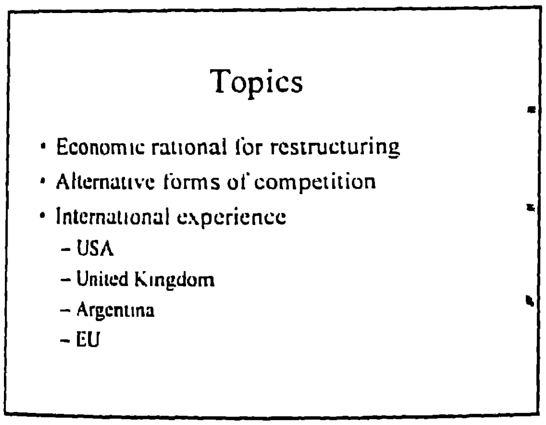
Tasks for work groups

- Review your list of top-three universal-access problems
- Pick the easiest to solve problem from the remaining two
- What do you propose (<10 bullet points)
- Prepare <10 speaking points for news briefing by Chair of regulatory agency)



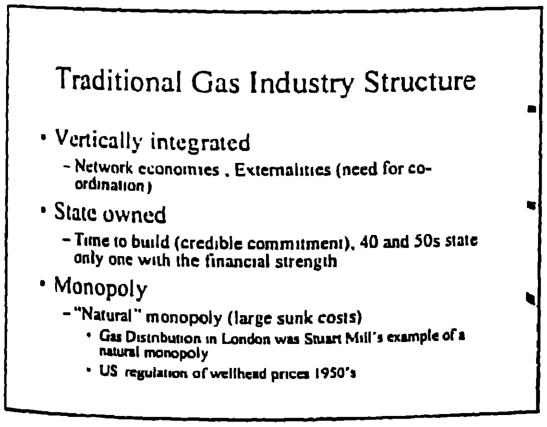
Restructuring for Competition in Gas Markets

Martin Rodriguez Pardina
September 2002



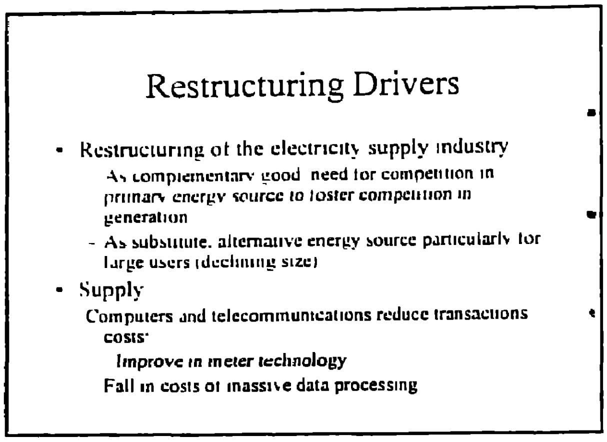
Topics

- Economic rational for restructuring
- Alternative forms of competition
- International experience
  - USA
  - United Kingdom
  - Argentina
  - EU



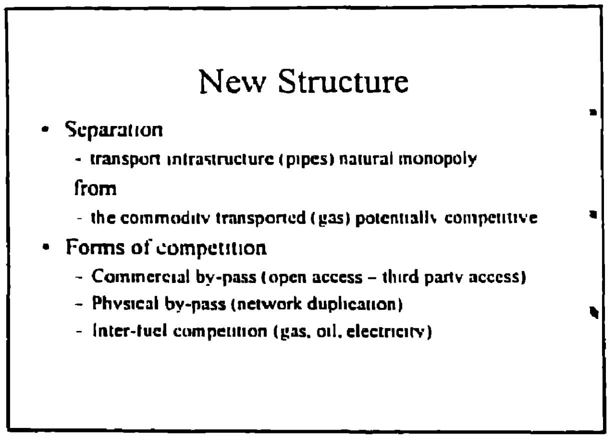
Traditional Gas Industry Structure

- Vertically integrated
  - Network economies , Externalities (need for co-ordination)
- State owned
  - Time to build (credible commitment), 40 and 50s state only one with the financial strength
- Monopoly
  - "Natural" monopoly (large sunk costs)
    - Gas Distribution in London was Stuart Mill's example of a natural monopoly
    - US regulation of wellhead prices 1950's



Restructuring Drivers

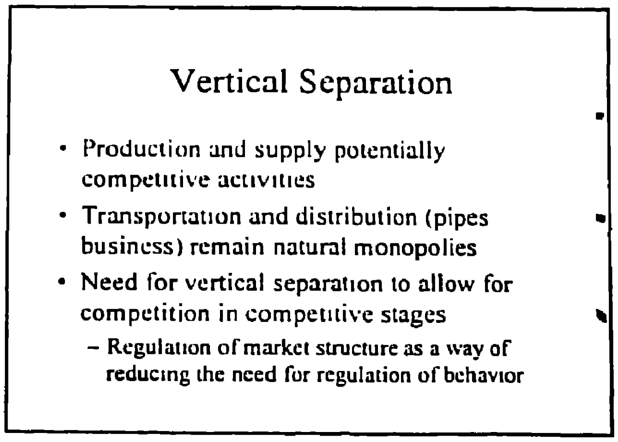
- Restructuring of the electricity supply industry
  - As complementary good need for competition in primary energy source to foster competition in generation
  - As substitute, alternative energy source particularly for large users (declining size)
- Supply
  - Computers and telecommunications reduce transactions costs:
    - *Improve in meter technology*
    - Fall in costs of massive data processing



New Structure

- Separation
  - transport infrastructure (pipes) natural monopoly

  from
  - the commodity transported (gas) potentially competitive
- Forms of competition
  - Commercial by-pass (open access – third party access)
  - Physical by-pass (network duplication)
  - Inter-fuel competition (gas, oil, electricity)



Vertical Separation

- Production and supply potentially competitive activities
- Transportation and distribution (pipes business) remain natural monopolies
- Need for vertical separation to allow for competition in competitive stages
  - Regulation of market structure as a way of reducing the need for regulation of behavior

Open Access

- Owners of essential facilities have an obligation to provide service on a non discriminatory basis to third parties
- Capacity rights (right to use the capacity of the pipe between an entry and an exit point) can be bought and sold in primary and secondary markets
- Pricing
  - If the owner of the essential facility is also a competitor in the market Access price and conditions
  - If the owner of the essential facility is not a competitor natural monopoly tariff

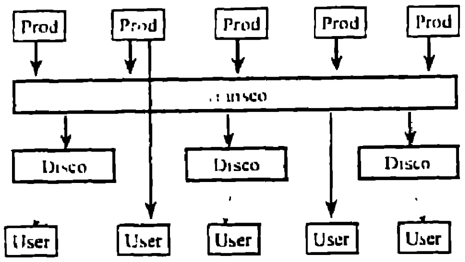
Alternative Organizations

- Vertically Integrated Company
  - Only one market exists for a bundle of natural gas and transportation (pipe) services
- Competitive arrangements
  - Two distinct markets·
    - gas market where participants trade gas as a commodity and minimize price and supply risk
    - transportation market, where participants trade transportation services for shipping gas through the pipeline system

Competitive Arrangements

- Wholesale competition
  - Only the transport (high pressure) has open access
  - Distribution companies and large users hooked directly to the transport network (v g electricity generators) are allowed to buy directly from producers
- Retail competition
  - Transport and distribution networks are declared open access
  - Large users (connected to the transport or distribution network) have the right to buy directly from producers

Gas Flows



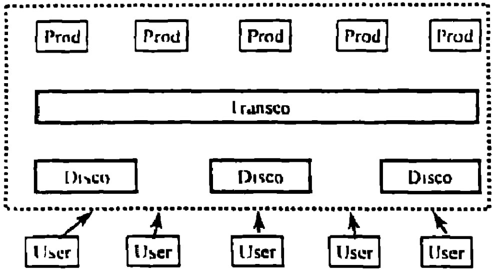
Prod Prod Prod Prod Prod

Transco

Disco Disco Disco

User User User User User

Financial Flows: Gas Market Integrated Monopoly



Prod Prod Prod Prod Prod

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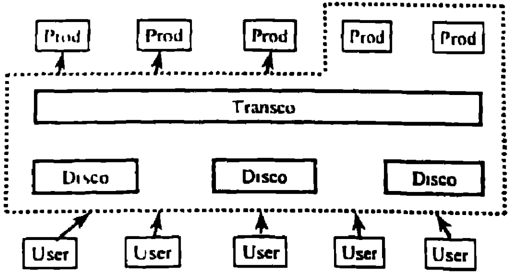
Financial Flows: Gas Market Integrated Monopoly (alt)



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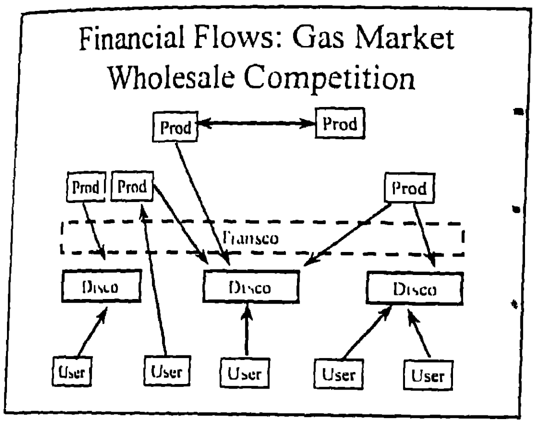
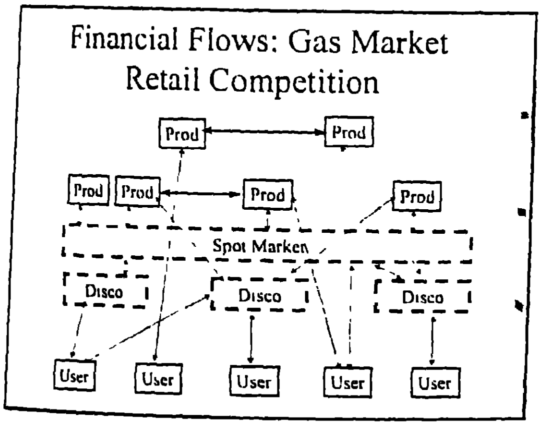
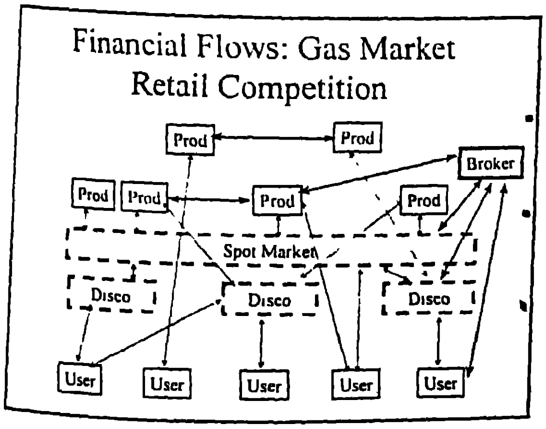


Financial Flows: Gas Market
Wholesale Competition



Financial Flows: Gas Market
Retail Competition



Financial Flows: Gas Market
Retail Competition

Gas Market

- Gas traded as a commodity
- Participants
  - Producers traders suppliers pipeline companies distribution utilities
  - Depends on the industry s vertical unbundling
  - Limits to the participation of transport companies
- Spot market
  - Concentration in a physical point (Henry hub in USA - Bacton Terminal in UK)
  - Prices reflect the economic value of natural gas given demand and supply conditions
- Contracts in the gas market
  - Physical for the physical delivery of gas
  - Financial for hedging price and quantities risks

Physical Contracts

- Contracts for the physical delivery of natural gas
  - Purpose of transaction
    - Resale Wholesale market
    - Consumption Retail market
  - Duration
    - Short term up to one month
    - Medium term from one to twelve months
    - Long term more than one year
  - Characteristics
    - Firm
    - Interruptible
    - Take or pay – deliver or pay

Financial Market

- Financial contracts used to redistribute and hedge price and quantity risks.
- Types of contracts
  - Individually tailored: every aspect negotiated by the parties to the contract
    - Forwards – Swaps
  - Standardized standard conditions on their main dimensions
    - Futures – Options
    - Traded in commodity exchanges such as NYMEX

Transportation Market

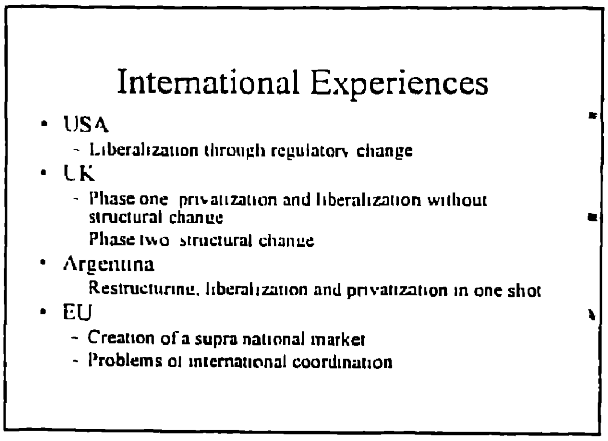
- Contracts to cover transportation services.
  - Supply of pipeline capacity – contractual carrier
  - Access and delivery – common carrier
  - Movement of natural gas
- Need to be matched with gas market: complementary goods.
- Markets
  - Primary market
  - Secondary market

Primary Market

- Transportation companies sell contracts to shippers and industry participants (usually for firm services)
- Natural monopoly characteristics of pipeline transportation imply that the primary transportation market has to be regulated
  - to limit the market power of pipeline companies and
  - to promote efficient allocation of resources.
- Used for expansion of high pressure networks
  - Open season mechanisms

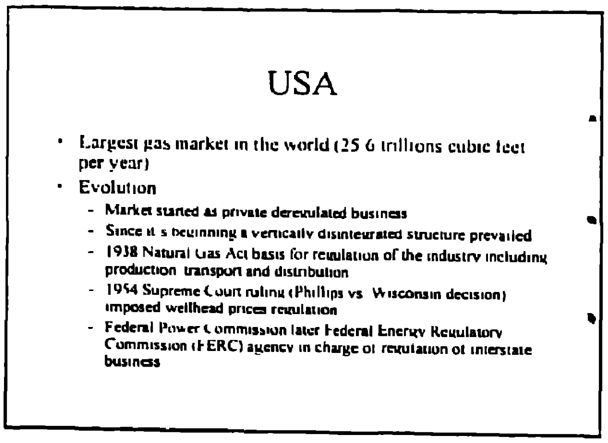
Secondary Market

- Holders of firm transportation contracts may resell them to other market participants
- Limits to participation of transportation companies to limit market power
- Needed to facilitate the simultaneous clearing of gas and transportation markets by enabling market participants to match their gas transactions with transportation contracts
- Resale mechanisms
  - Auctions used mainly for medium to long term contracts
  - Bilateral trading (high transaction costs)
  - Transportation spot market for short term contracts Need for standardization in all important dimensions (now developing in the US and Argentina)



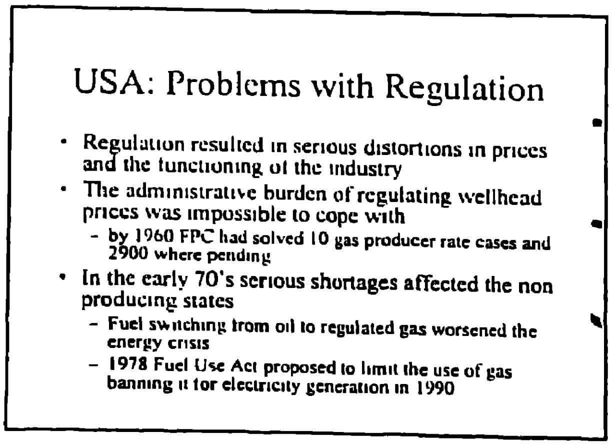
International Experiences

- USA
  - Liberalization through regulatory change
- UK
  - Phase one privatization and liberalization without structural change
  - Phase two structural change
- Argentina
  - Restructuring, liberalization and privatization in one shot
- EU
  - Creation of a supra national market
  - Problems of international coordination



USA

- Largest gas market in the world (25.6 trillions cubic feet per year)
- Evolution
  - Market started as private deregulated business
  - Since it's beginning a vertically disintegrated structure prevailed
  - 1938 Natural Gas Act basis for regulation of the industry including production transport and distribution
  - 1954 Supreme Court ruling (Phillips vs Wisconsin decision) imposed wellhead prices regulation
  - Federal Power Commission later Federal Energy Regulatory Commission (FERC) agency in charge of regulation of interstate business



USA: Problems with Regulation

- Regulation resulted in serious distortions in prices and the functioning of the industry
- The administrative burden of regulating wellhead prices was impossible to cope with
  - by 1960 FPC had solved 10 gas producer rate cases and 2900 where pending
- In the early 70's serious shortages affected the non producing states
  - Fuel switching from oil to regulated gas worsened the energy crisis
  - 1978 Fuel Use Act proposed to limit the use of gas banning it for electricity generation in 1990

USA Deregulation

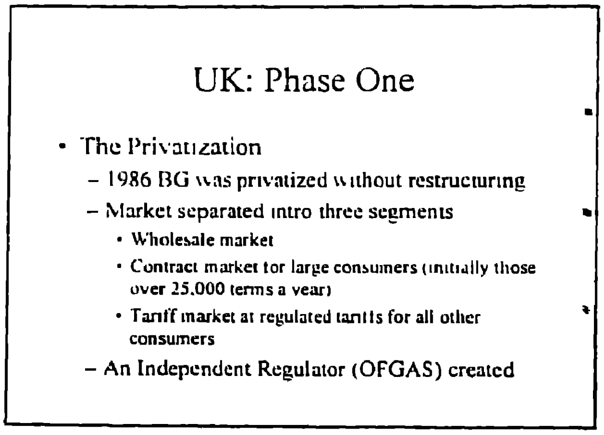
- FERC Order 380 of 1984
    - First major competition initiative
    - Changed pipe companies tariff structure
- FERC Order 436 of 1985
    - Introduced open access to interstate transportation
        - Companies choosing open access were granted automatic expansion permits
    - Limited the use of long term contracts
- FERC Order 636 of 1992
    - Unbundling of natural gas sales from pipeline transportation required
    - Resale of firm transportation contracts program introduced
    - Entry into gas marketing liberalized

USA Results so Far

- Markets
    - Fully developed gas and transportation markets
- Wellhead prices
    - Constant in nominal terms since 1988
    - Fall in real terms 26% (and 24% at city gate)
- Prices to final consumer
    - Drop in real terms Uneven distribution. Large users were the main recipients of the gains

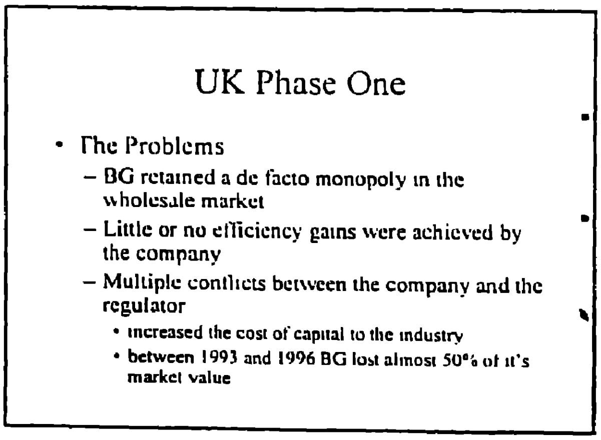
UK

- Up to 1986 a vertically integrated state owned company British Gas had the monopoly in transport, distribution and supply
- Production was decentralized in more than 40 producers
    - But BG and BP has strong market power



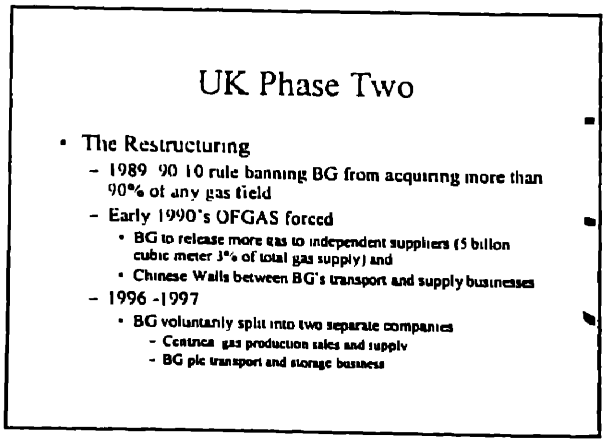
UK: Phase One

- The Privatization
  - 1986 BG was privatized without restructuring
  - Market separated intro three segments
    - Wholesale market
    - Contract market for large consumers (initially those over 25,000 terms a year)
    - Tariff market at regulated tariffs for all other consumers
  - An Independent Regulator (OFGAS) created



UK Phase One

- The Problems
  - BG retained a de facto monopoly in the wholesale market
  - Little or no efficiency gains were achieved by the company
  - Multiple conflicts between the company and the regulator
    - increased the cost of capital to the industry
    - between 1993 and 1996 BG lost almost 50% of it's market value



UK Phase Two

- The Restructuring
  - 1989 90 10 rule banning BG from acquiring more than 90% of any gas field
  - Early 1990's OFGAS forced
    - BG to release more gas to independent suppliers (5 billon cubic meter 3% of total gas supply) and
    - Chinese Walls between BG's transport and supply businesses
  - 1996 -1997
    - BG voluntarily split into two separate companies
      - Centrica gas production sales and supply
      - BG plc transport and storage business

UK Results

- Fully developed gas and financial markets
  - Bilateral contracts
  - Spot markets
  - The on-system market
  - The Flexibility mechanism
- Liberalization to small consumers completed by early 2000
- Main lesson
  - To promote competition the liberalization of entry to gas supply and of gas prices must be accompanied by open access to transportation and storage facilities
  - Regulating the structure of the market rather than the conduct of the agents is the most efficient alternative

Argentina

- Long tradition in gas. First high pressure pipe (1500 Km long) build in the 40's.
- Prior to 1992 Gas del Estado was an integrated public owned monopoly in charge of gas transport distribution and commercialization.
- Production was mostly in hand of YPF the state owned oil company

Industry Restructuring

- A Regulatory Framework for the gas industry was passed by Congress in 1992.
- Gas del Estado, the State owned monopoly was divided into 2 Transport and 8 Distribution Companies.
- All Companies were privatized by the end of 1992 through an international bidding process.

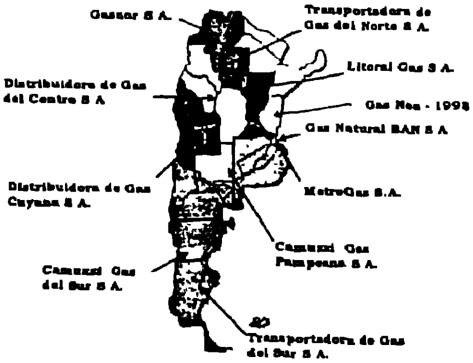
Industry Restructuring

- Vertical Separation
  - Transport companies are not allowed to buy or sell gas
  - Transport companies can not resale capacity in the secondary market (price ceiling)
  - Physical by-pass of transport and distribution networks allowed by Law
- Production
  - Very high concentration of production and trading in a single company (YPF)
  - Market power in production outside the regulators jurisdiction

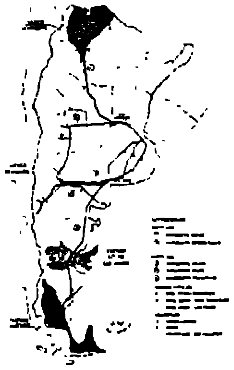
Regulatory Framework

- ENARGAS an independent regulator was created by law 24076.
- Main duties include:
  - Protect consumer's rights
  - Promote efficiency and competition in all segments of the industry
  - Regulate transport and distribution activities

GAS DISTRIBUTION AREAS


Gasnor S A.
Transportadora de Gas del Norte S A.
Litoral Gas S A.
Distribuidora de Gas del Centro S A
Gas Nea - 1998
Gas Natural BAN S A
Distribuidora de Gas Cuyana S A.
MetroGas S.A.
Camuzzi Gas Pampeana S A.
Camuzzi Gas del Sur S A.
Transportadora de Gas del Sur S A.

Gas Transport System

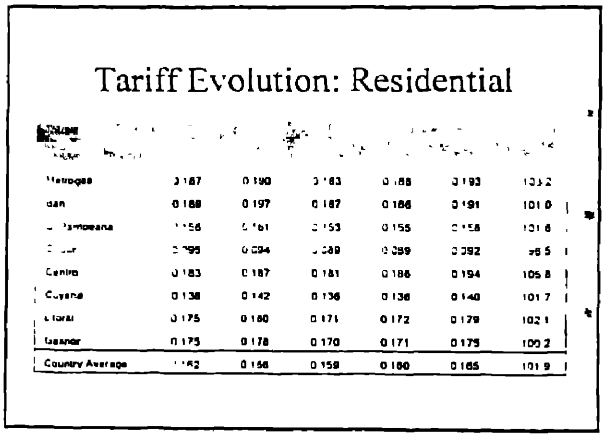


Tariff Regime

- Price Cap
  - Originally based on Long Run Marginal Cost
  - Tariff fixed before privatization
  - Price limits over each individual price
  - By-pass allowed
  - Additional user contributions have to be justified
  - Seasonal Adjustments of gas prices
  - Tariff reviews every five years

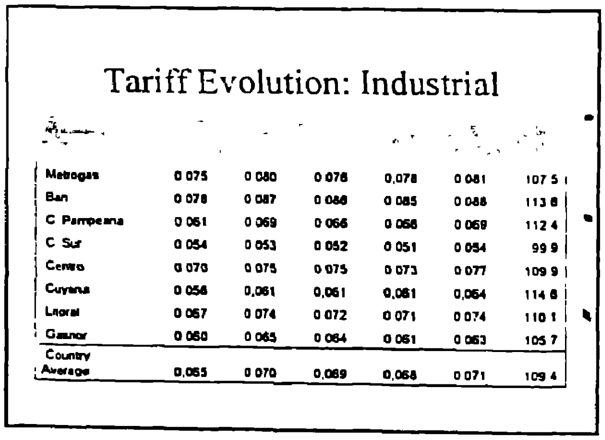
Tariff Regime

- Tariffs vary with distance and consumption
- Types of Service
  - Firm
  - Interruptible
- Automatic adjustment every six months of Transport and Distribution margins with PPI (USA)



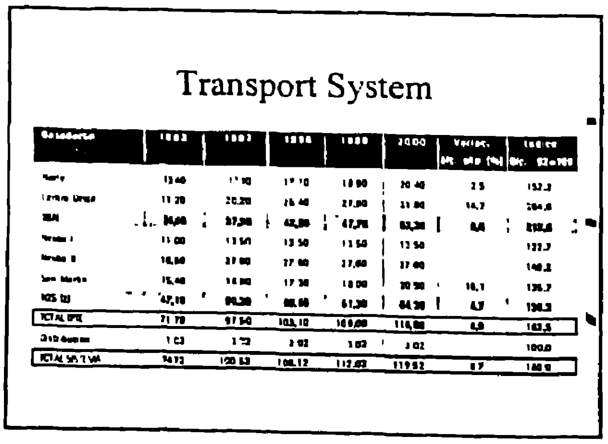
Tariff Evolution: Residential

Metrogas	0 187	0 190	0 183	0 188	0 193	103 2
Ban	0 189	0 197	0 187	0 186	0 191	101 0
C Pampeana	0 156	0 161	0 153	0 155	0 158	101 6
C Sur	0 095	0 094	0 089	0 089	0 092	96 5
Centro	0 183	0 187	0 181	0 188	0 194	105 8
Cuyana	0 138	0 142	0 136	0 136	0 140	101 7
Litoral	0 175	0 180	0 171	0 172	0 179	102 1
Gasnor	0 175	0 178	0 170	0 171	0 175	100 2
Country Average	0 162	0 156	0 159	0 160	0 165	101 9



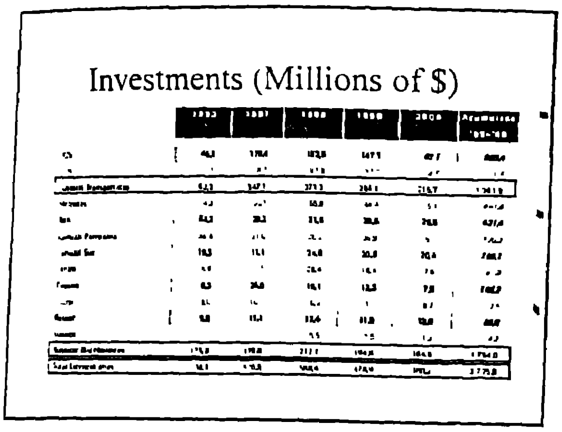
Tariff Evolution: Industrial

Metrogas	0 075	0 080	0 078	0,078	0 081	107 5
Ban	0 078	0 087	0 086	0 085	0 088	113 8
C Pampeana	0 061	0 069	0 066	0 066	0 069	112 4
C Sur	0 054	0 053	0 052	0 051	0 054	99 9
Centro	0 070	0 075	0 075	0 073	0 077	109 9
Cuyana	0 056	0,061	0,061	0,061	0,064	114 6
Litoral	0 067	0 074	0 072	0 071	0 074	110 1
Gasnor	0 060	0 065	0 064	0 061	0 063	105 7
Country Average	0,065	0 070	0,069	0,068	0 071	109 4

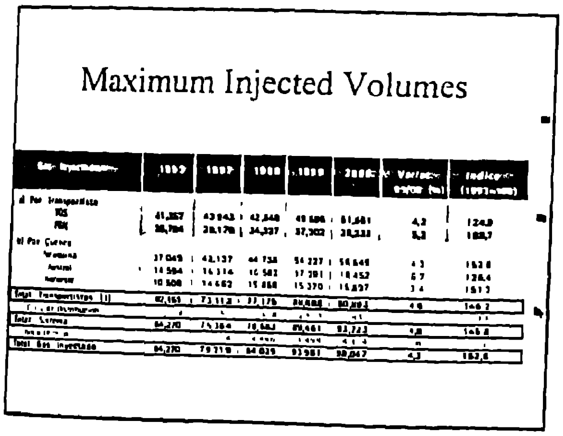


Transport System

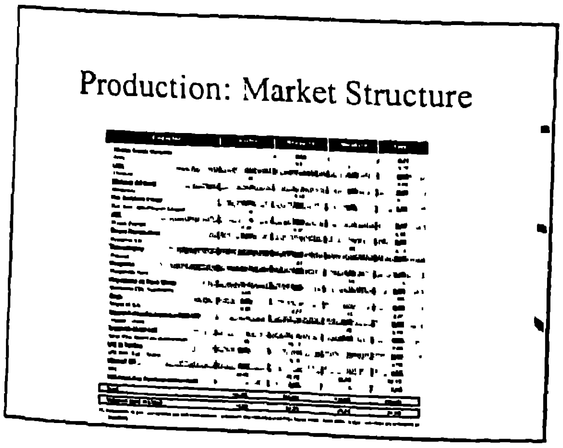
Gasoducto	[illegible]	[illegible]	[illegible]	[illegible]	2000	Variac. [illegible] (%)	Indice [illegible] 93=100
Norte	13,40	[illegible]	[illegible]	18 90	20 40	2 5	152,2
Centro Oeste	11 20	20,20	25 40	27,00	31 00	14,7	264,6
TGN	[illegible]	37,30	42,00	47,90	[illegible]	[illegible]	[illegible]
Neuba I	11 00	13 50	13 50	13 50	13 50		122,7
Neuba II	[illegible]	17 00	17 00	17,60	17 60		140,2
San Martín	15,40	16 00	17 30	18 00	20 50	16,1	136,7
TGS (b)	47,10	[illegible]	[illegible]	61,30	64 30	4,7	[illegible]
TOTAL EPE	71 70	97 50	103,10	109,00	[illegible]	[illegible]	[illegible]
Distribución	1 03	[illegible]	1 02	1 02	1 02		100,0
TOTAL SISTEMA	[illegible]	[illegible]	106,12	112,02	119 52	6 7	[illegible]



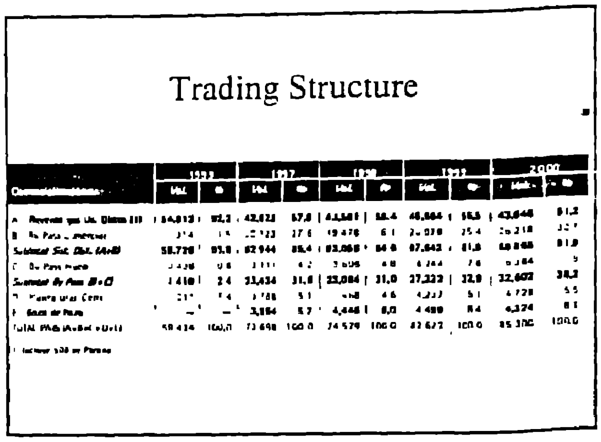
Investments (Millions of $)



Maximum Injected Volumes



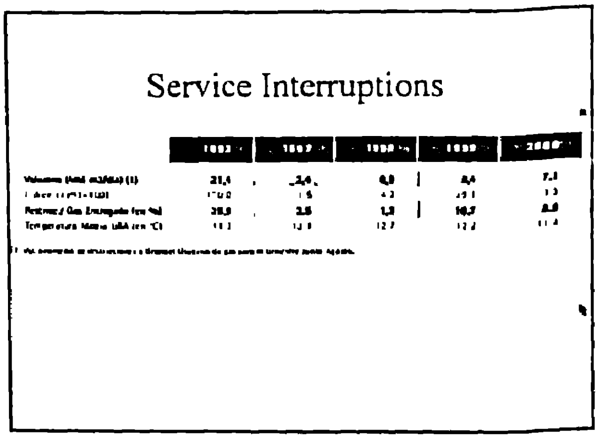
Production: Market Structure



Trading Structure

	[illegible]	1996		1997		1998		1999		2000	
		Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
A	[illegible] (1)	54,812	92,2	42,823	57,8	43,581	58,4	46,884	55,5	43,646	51,2
B	[illegible]	[illegible]	[illegible]	[illegible]	27,6	19,476	[illegible]	[illegible]	25,4	[illegible]	[illegible]
Subtotal Sist. Dist. (A+B)		58,726	93,8	62,944	85,4	63,068	84,6	67,842	81,0	69,868	81,9
C	[illegible]	[illegible]	0,6	[illegible]	4,2	3,606	4,8	6,244	7,6	[illegible]	[illegible]
Subtotal [illegible] (B+C)		1,410	2,4	23,434	31,8	23,084	31,0	27,222	32,9	32,602	38,2
D	[illegible]	[illegible]	[illegible]	3,788	5,1	[illegible]	4,6	[illegible]	5,1	4,728	5,5
E	[illegible]	–	–	3,854	5,7	4,446	6,0	4,490	[illegible]	4,374	[illegible]
TOTAL [illegible]		58,434	100,0	73,698	100,0	74,579	100,0	82,627	100,0	85,306	100,0

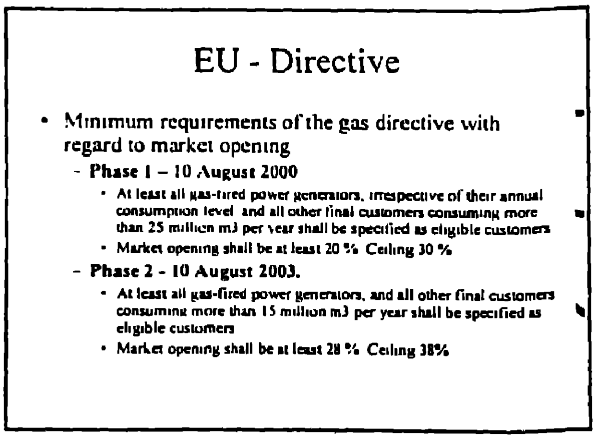
(1) [illegible]



Service Interruptions

	1996	1997	1998	1999	2000
Volumen (MM m3/dia) (1)	21,4	2,4	0,0	8,4	7,1
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	28,9	3,5	1,3	10,7	8,0
Temperatura [illegible] (en °C)	[illegible]	[illegible]	12,7	12,2	[illegible]

(1) [illegible]



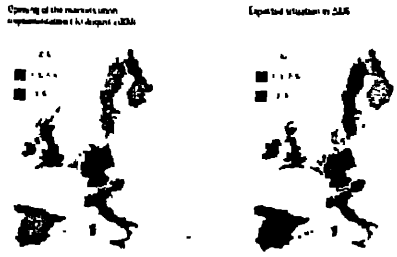
EU - Directive

- Minimum requirements of the gas directive with regard to market opening
  - Phase 1 – 10 August 2000
    - At least all gas-fired power generators, irrespective of their annual consumption level and all other final customers consuming more than 25 million m3 per year shall be specified as eligible customers
    - Market opening shall be at least 20 % Ceiling 30 %
  - Phase 2 - 10 August 2003.
    - At least all gas-fired power generators, and all other final customers consuming more than 15 million m3 per year shall be specified as eligible customers
    - Market opening shall be at least 28 % Ceiling 38%

EU - Directive

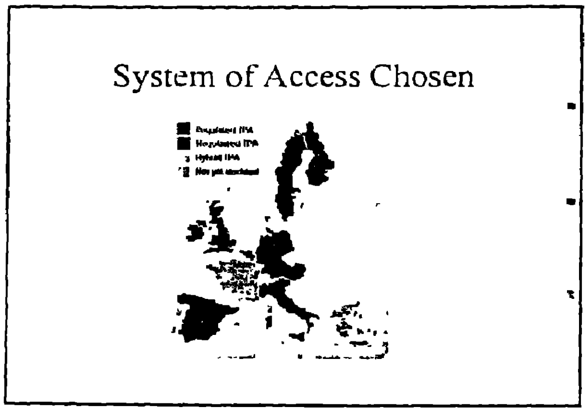
- **Phase 3 - 10 August 2008.**
  - At least all gas-fired power generators and all other final customers consuming more than 5 million m3 per year shall be specified as eligible customers
  - Market opening shall be at least 33 %. Ceiling 43%
- Distribution companies
  - Member States may decide whether they shall be eligible
  - always have the right to have third-party access for volumes contracted for the supply of eligible customers within their distribution system
- The application of the directive shall be reviewed for the period after August 2008 in the light of experience gained.

Implementation



System of Access

- Competition requires open third party access (TPA) to transport and distribution pipelines
- Alternative forms of access:
  - regulated access based on published tariffs and other terms for the use of the system; or
  - negotiated access based on commercial agreements between the parties and publication of the main commercial conditions for the use of the system.
  - Hybrid combination of both systems, for example regulated access at distribution level and negotiated access for transmission.



System of Access Chosen

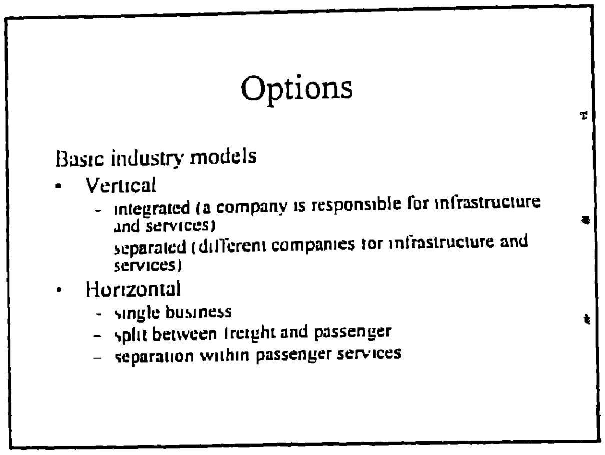
Sectoral Break-outs: Transport
Railway Restructuring and Regulation: Worldwide Lessons

Ian Alexander
Friday, September 13th 2002
SAFIR Core Course, Goa

Outline

- General models for reform in the rail sector
- Background and restructuring model adopted in England, Scotland and Wales
- Background and restructuring model adopted in Brazil
- The regulation of the franchise approach adopted in the England, Scotland and Wales

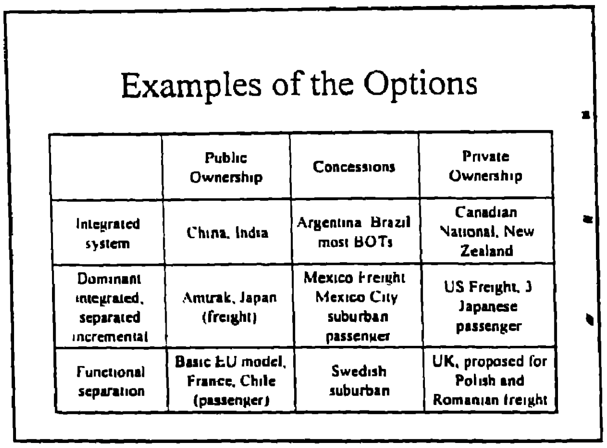
General Models of Rail Reform



Options

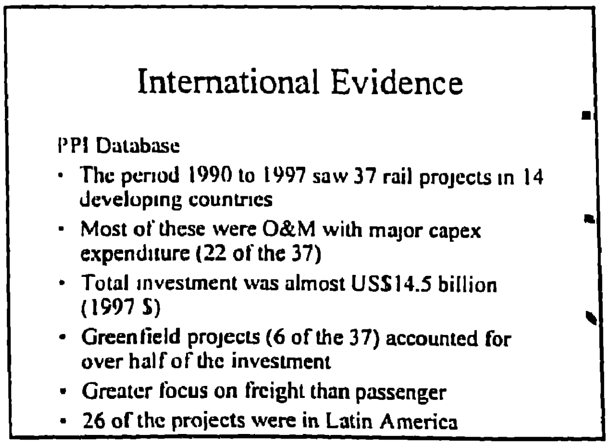
Basic industry models

- Vertical
  - integrated (a company is responsible for infrastructure and services)
  - separated (different companies for infrastructure and services)
- Horizontal
  - single business
  - split between freight and passenger
  - separation within passenger services



Examples of the Options

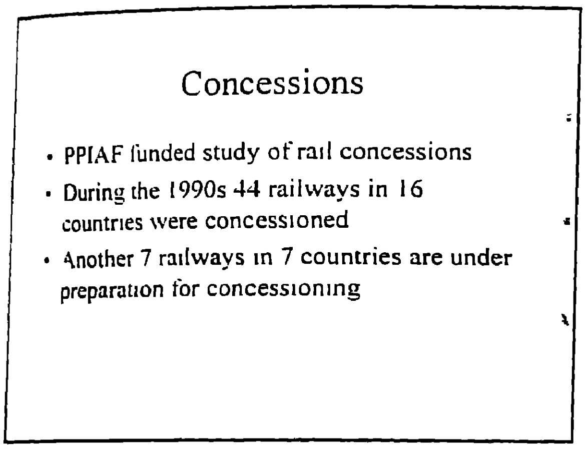
	Public Ownership	Concessions	Private Ownership
Integrated system	China, India	Argentina Brazil most BOTs	Canadian National, New Zealand
Dominant integrated, separated incremental	Amtrak, Japan (freight)	Mexico Freight Mexico City suburban passenger	US Freight, 3 Japanese passenger
Functional separation	Basic EU model, France, Chile (passenger)	Swedish suburban	UK, proposed for Polish and Romanian freight



International Evidence

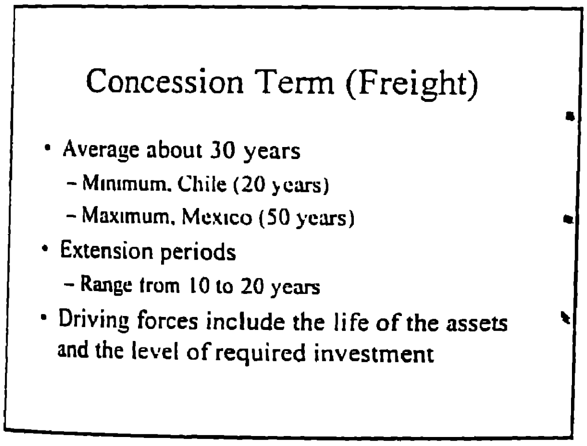
PPI Database

- The period 1990 to 1997 saw 37 rail projects in 14 developing countries
- Most of these were O&M with major capex expenditure (22 of the 37)
- Total investment was almost US$14.5 billion (1997 $)
- Greenfield projects (6 of the 37) accounted for over half of the investment
- Greater focus on freight than passenger
- 26 of the projects were in Latin America



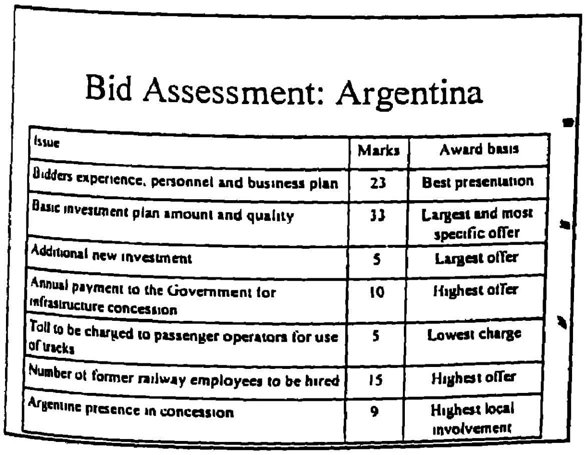
Concessions

- PPIAF funded study of rail concessions
- During the 1990s 44 railways in 16 countries were concessioned
- Another 7 railways in 7 countries are under preparation for concessioning



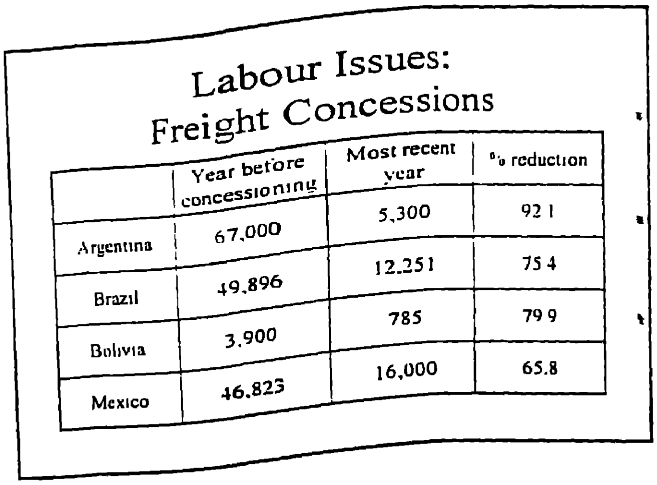
Concession Term (Freight)

- Average about 30 years
  - Minimum, Chile (20 years)
  - Maximum, Mexico (50 years)
- Extension periods
  - Range from 10 to 20 years
- Driving forces include the life of the assets and the level of required investment



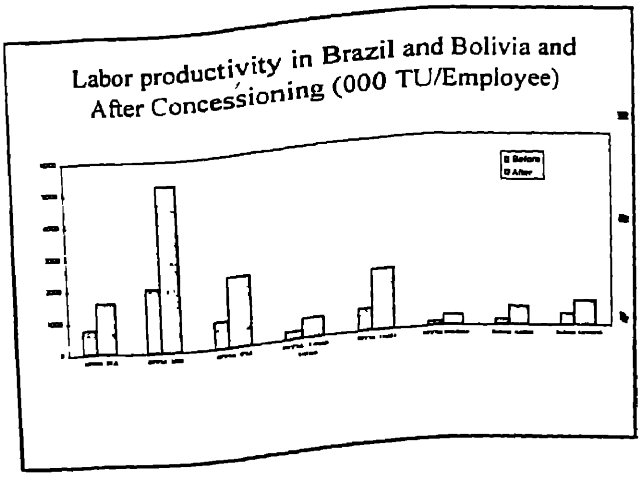
Bid Assessment: Argentina

Issue	Marks	Award basis
Bidders experience, personnel and business plan	23	Best presentation
Basic investment plan amount and quality	33	Largest and most specific offer
Additional new investment	5	Largest offer
Annual payment to the Government for infrastructure concession	10	Highest offer
Toll to be charged to passenger operators for use of tracks	5	Lowest charge
Number of former railway employees to be hired	15	Highest offer
Argentine presence in concession	9	Highest local involvement

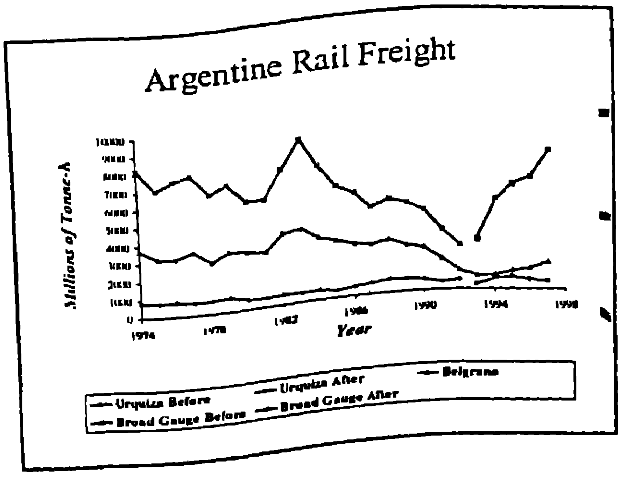


Labour Issues: Freight Concessions

	Year before concessioning	Most recent year	% reduction
Argentina	67,000	5,300	92 1
Brazil	49,896	12,251	75 4
Bolivia	3,900	785	79 9
Mexico	46,823	16,000	65.8



Labor productivity in Brazil and Bolivia and After Concessioning (000 TU/Employee)



Argentine Rail Freight

The New Zealand Experience

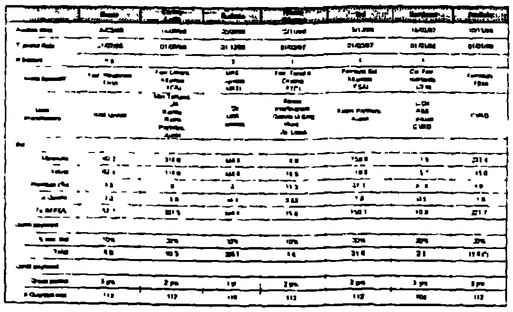
- NZ Rail was sold to TranzRail as a vertically integrated unit for $400m in 1993
- Had seen its long-haul rail freight halved in a decade prior to sale
- Successfully turned around partly:
  - by marketing success
  - upturn in markets
- Government undertook a major review of the impact, and need, of privatisation
- Recent restructuring announcements by TranzRail – especially to get out of passenger services

Industry Structure: Brazil

Brazil

- Traditionally had one major rail company
- This was split into several vertically integrated companies
- These were then concessioned
- Freight is the primary concern

The Concessions



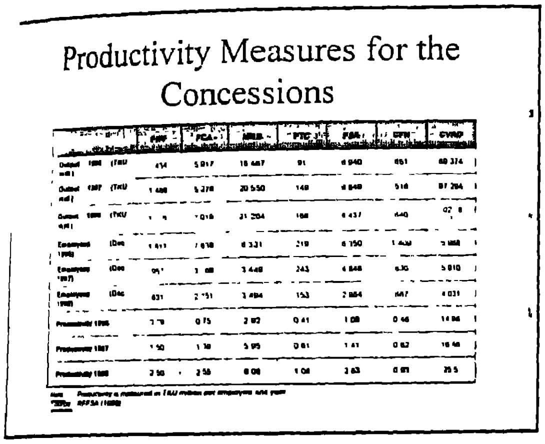
Issues

- Many of the investors are mining operators who are major users of the railway
- Several investors are shareholders in more than one railway
- Premiums increased in part as investors realized the potential gains to be made from the assets (supports the idea of a staggered sale)

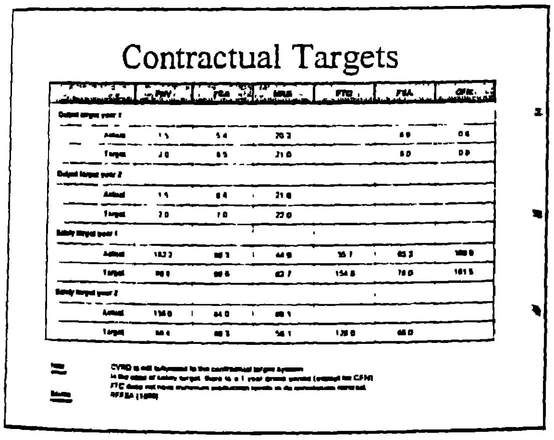
Impact of Privatization

What has been the impact on:

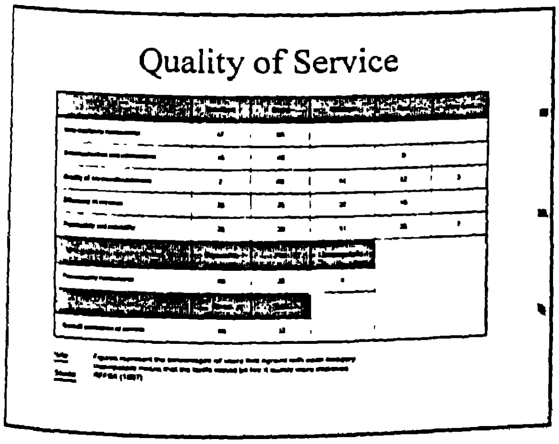
- Productivity
- Safety
- Quality of service
- Overall performance



Productivity Measures for the Concessions

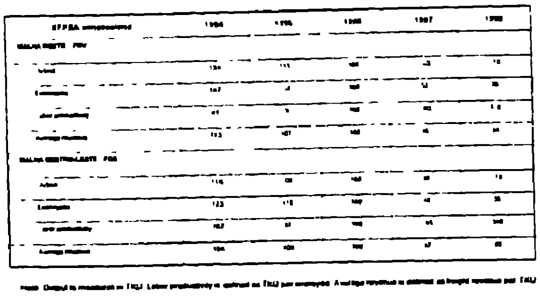


Contractual Targets



Quality of Service

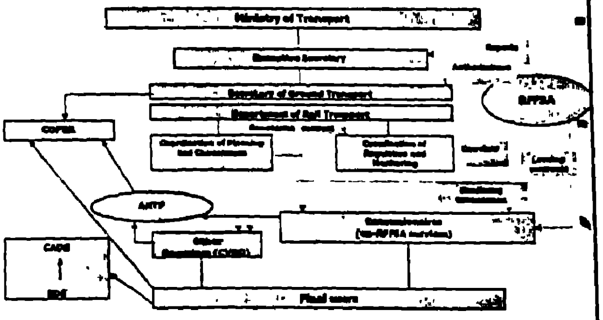
Overall Performance

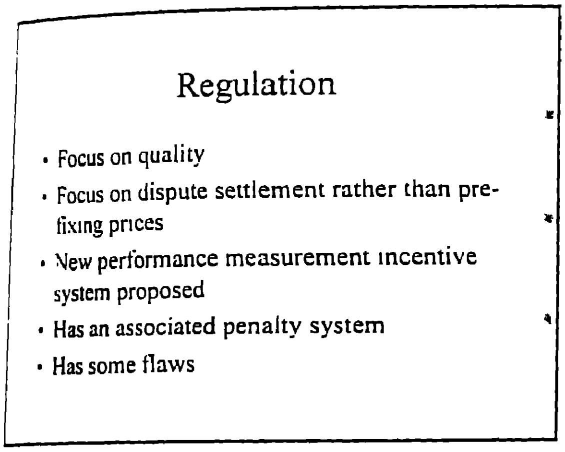


Regulatory Institutions

- At privatization some new institutions were created
- Regulatory powers were shared among several groups
- Potentially too much day-to-day involvement was possible under the new structure
- Not clear what the role of some agencies, like CADE (the competition agency) is

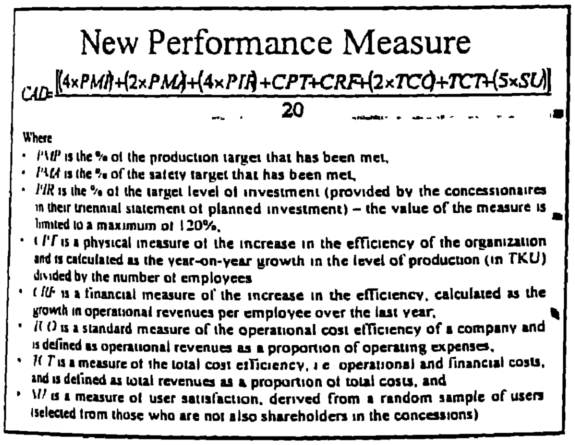
Current Institutional Structure





Regulation

- Focus on quality
- Focus on dispute settlement rather than pre-fixing prices
- New performance measurement incentive system proposed
- Has an associated penalty system
- Has some flaws

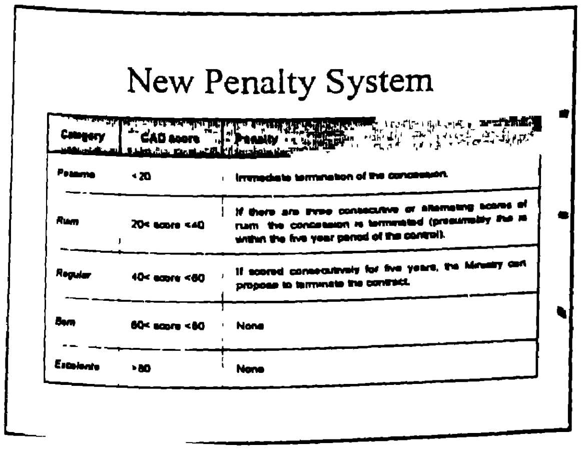


New Performance Measure

$$CAD = \frac{[(4\times PMP)+(2\times PMA)+(4\times PIR)+CPT+CRF+(2\times TCO)+TCT+(5\times SU)]}{20}$$

Where

- PMP is the % of the production target that has been met,
- PMA is the % of the safety target that has been met,
- PIR is the % of the target level of investment (provided by the concessionaires in their triennial statement of planned investment) – the value of the measure is limited to a maximum of 120%,
- CPT is a physical measure of the increase in the efficiency of the organization and is calculated as the year-on-year growth in the level of production (in TKU) divided by the number of employees
- CRF is a financial measure of the increase in the efficiency, calculated as the growth in operational revenues per employee over the last year,
- TCO is a standard measure of the operational cost efficiency of a company and is defined as operational revenues as a proportion of operating expenses,
- TCT is a measure of the total cost efficiency, i e operational and financial costs, and is defined as total revenues as a proportion of total costs, and
- SU is a measure of user satisfaction, derived from a random sample of users (selected from those who are not also shareholders in the concessions)



New Penalty System

Category	CAD score	Penalty
Pessimo	<20	Immediate termination of the concession.
Ruim	20< score <40	If there are three consecutive or alternating scores of ruim the concession is terminated (presumably this is within the five year period of the control).
Regular	40< score <60	If scored consecutively for five years, the Ministry can propose to terminate the contract.
Bom	60< score <80	None
Excelente	>80	None

Summary 1

- Successful privatization process
  - Better than anticipated proceeds
  - Improvements in service
- Vertically integrated system – reflection of the type of service
- Little incentive for development of new routes – North/South has been suggested but operators see no incentive to switch away from the traditional West/East focus

Summary 2

- Little incentive for open access
- Care about allowing major users to be owners should be applied since innovation may be stifled
- Allowing some investors to be major shareholders in more than one franchise can lead to problems
- Clarity about the regulatory arrangements is necessary

Jagdish Sagar
Principal Secretary
Power Department
Govt. of Delhi
(as well as Chairman & Managing Director in the Delhi Power Supply Company Ltd., Indraprastha Power Generation Company Ltd. and the Delhi Power Company Ltd.)
E-mail: chmndvb@bol.net.in

Mr Sagar joined IAS in 1966.

Served in various capacities in Goa (twice), Daman and Dadra, Nagar Haveli, Andaman and Nicobar Islands and Lakshadweep Islands besides two assignments in Central Government (Department of Personnel from 1974 to 1979 and Ministry of HRD, Department of Education in 1987 to 1992). While in the Ministry of HRD, dealt among other things with copyright and was responsible for drafting the Bill which eventually became the Copyright Amendment Act 1994. Continues to be involved in this area and is as a member of various committees set up by the Ministry of HRD.

Since March 1993, has been associated largely with matters relating to urban development and urban administration including the power sector, as Principal Secretary(L&B)/Principal Secretary(UD) in Delhi Government and for two years as Adviser to Administrator, Chandigarh. Organised an international conference on the planning and architecture of Chandigarh in January, 1997 and has been writing and speaking on this and related areas.

Took over as Chairman, DVB (Delhi Vidyut Board) on 23.04.1999, on return from Chandigarh. He was closely involved in the process of implementing the Government's policy and unbundling DVB and privatising distribution, while at the same time working to improve and modernise the organisation as a preparatory measure. The Delhi Vidyut Board was finally unbundled and three distribution companies carved out of it privatised from 1.7.02. Currently Principal Secretary, Power Department, Govt. of Delhi, as well as Chairman & Managing Director in the Delhi Power Supply Company Ltd., Indraprastha Power Generation Company Ltd. and the Delhi Power Company Ltd., being the residual government companies left after privatisation of DVB's distribution business.

DVB Restructuring
&
Privatisation of Distribution in Delhi

Jagdish Sagar

September 2002

DVB's last year:
Accounts (unaudited) for 2001-02

I POWER SUPPLY COMPANY LIMITED

L STATEMENT OF ACCOUNTS FOR THE YEAR 2001-02

DVB's T&D Losses (% of unbilled supply) were its best known statistic:

- With only metered consumers, there is no fudging. Post-reform revelations in Orissa, and other States have revealed comparable T & D Losses.
- Too much simplistic thinking about the problem:
  - View it as a managerial rather than a moral issue,
  - Consider the logistics.

T & D Losses in Delhi: the issues

- Unauthorised colonies and jhuggies.
- Theft by consumers.
- Need for better metering.
- Improvement of billing and commercial practices.

Reform Package:
Valuation of Assets

- Business Valuation, as adopted -
  - value assets on going concern basis
  - asset value derived based on future earnings potential assuming reasonable retail tariff increase and efficiency improvements

..... Valuation of Assets

- Principles applied.
  - electricity business becomes self sustaining within five years
  - Minimise retail tariff shock.
  - Support from GNCTD for funding initial losses - about Rs. 2600 crores (increased to Rs 3450 crores)

Allocation of Assets & Liabilities

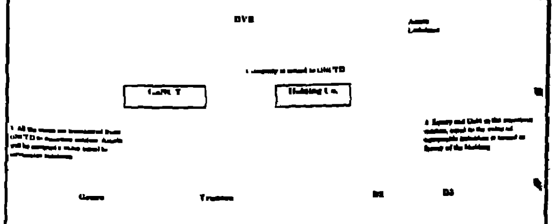
(Rs. crores)

Financial Restructuring Plan

Estimate of Total Liabilities (as on 31/3/2001)

(Rs. crores)

…..Financial Restructuring Plan



.....Financial Restructuring Plan

- Of total liabilities of Rs 23,137 cr, Rs 3160 cr serviceable, Rs 19977 cr parked in Holding Company pending further decision
  - GoI requested to write off DESU liabilities of Rs 12953 cr,
  - GNCTD to guarantee Rs 4457 cr bond issue against power and fuel liabilities;
  - GNCTD to release balance requirement of Rs 887 cr towards TBL-later increased to Rs 1386 cr;

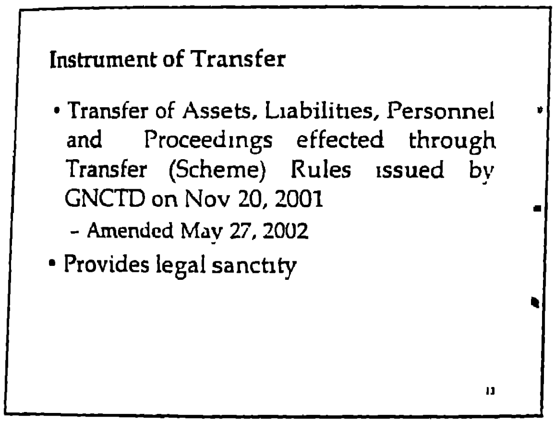
.....Financial Restructuring Plan

Support for funding losses in initial years

- About Rs 2600 cr (increased to Rs 3450 cr) to TRANSCO
  - at interest rate of 12%
  - moratorium of three years (increased to four in negotiation) on interest and principal repayment
  - Servicing of principal in eighteen equal half yearly installments.

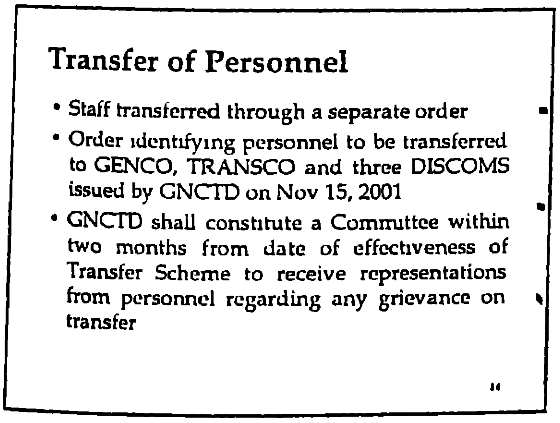
..... Financial Restructuring Plan

- Outstanding Receivables
  - receivables transferred to Holding Company; and DISCOMS authorised to collect them and retain 20% as service charge



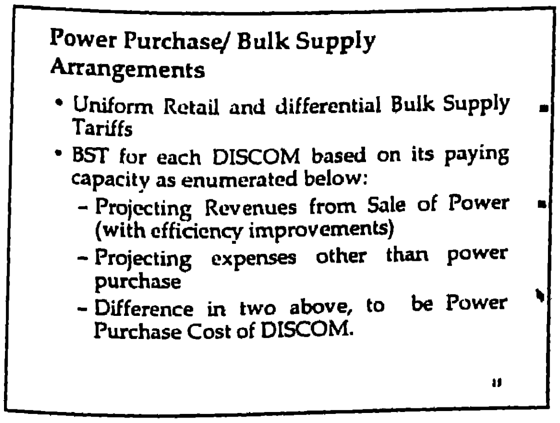
Instrument of Transfer

- Transfer of Assets, Liabilities, Personnel and Proceedings effected through Transfer (Scheme) Rules issued by GNCTD on Nov 20, 2001
  - Amended May 27, 2002
- Provides legal sanctity



Transfer of Personnel

- Staff transferred through a separate order
- Order identifying personnel to be transferred to GENCO, TRANSCO and three DISCOMS issued by GNCTD on Nov 15, 2001
- GNCTD shall constitute a Committee within two months from date of effectiveness of Transfer Scheme to receive representations from personnel regarding any grievance on transfer



Power Purchase/ Bulk Supply Arrangements

- Uniform Retail and differential Bulk Supply Tariffs
- BST for each DISCOM based on its paying capacity as enumerated below:
  - Projecting Revenues from Sale of Power (with efficiency improvements)
  - Projecting expenses other than power purchase
  - Difference in two above, to be Power Purchase Cost of DISCOM.

.....Power Purchase/ Bulk Supply Arrangements

- TRANSCO to buy and sell power for initial 5 years
  - but no bar on additional purchases by DISCOMs direct from generating companies or other sources
- After 5 years DISCOMs to buy power directly and pay wheeling charges to TRANSCO

Strategy for Private Sector Participation (PSP)

No Time Gap between Corporatisation & Privatisation

- Shell companies registered in advance
- objective was privatisation, not mere corporatisation
- new entities should not incur losses before privatisation
- Govt retained option to abort the entire exercise in absence of investor response

... Strategy for PSP

Criteria of Selection of Investor

- Minimum target of Aggregate Technical & Commercial Loss to be achieved by investors each year for next five years specified
- Bids invited on "Aggregate Technical & Commercial Loss" with shares being sold at par value

... Strategy for PSP

- Suggestive Capex figures for DISCOMS: Annual approval from DERC with ARR.
- Aggregate Technical & Commercial Loss - the difference between units input and units for which payment is realised
  - to capture the effect of both the Transmission & Distribution loss and shortfall in collection efficiency
  - avoids error inherent in billing figures

... Strategy for PSP

Criteria of Selection of Investor

- Incentives provided for over-achievement
  - utility to retain 50% and consumers 50% (as rebate on tariffs) of additional revenue realised
- Number of DISCOMS that a bidder can acquire limited to two
  - promotes competition
  - limited number of pre-qualified bidders

... Strategy for PSP

Policy Directions to DERC

- to mitigate uncertainty and ensure successful privatisation, GNCTD issued policy directions under Section 12 of Reform Act on Nov 22, 2001 (Amended May 31, 2002).

… Strategy for PSP

- Policy Directions require that tariffs for 2001-07 take into account.
  - Selection process of bidders
  - Technical & Commercial Loss to be on the basis of the bid of the selected bidder
  - DISCOMS earn 16% Return on Equity (Assuming loss reduction, ARR approval)
  - Incentives on over-achievement. 50% retained, 50% to rebate on tariff

Opening AT&C loss levels approved by DERC:

Central/East	57.2%
North/Northwest	48.1%
South/West	48.1%
All	50.7%

Minimum AT&C Losses Stipulated by GNCTD

	2002-3	2003-4	2004-5	2005-6	2006-7
C/E	1.50%	5.00%	5.00%	5.00%	4.25%
S/W	1.25%	5.00%	4.50%	4.50%	4.00%
N/NW	1.50%	5.00%	4.50%	4.25%	4.00%

Actual loss levels accepted after negotiation

	2002-3	*2003-4*	*2004-5*	*2005-6*	*2006-7*
C/E	0.75%	1.75%	4.00%	5.65%	5.10%
S/W	0.55%	1.55%	3.70%	6.00%	5.60%
N/NW	1.50%	2.25%	4.50%	5.50%	4.25%

Basic issues with or without privatisation:

- To meet costs, avoid continuing accumulation of losses, it is necessary to balance
  - Expected gains from efficiency improvement
  - Tariff increases
  - Transitional assistance
- What efficiency improvements are possible in the short and medium terms?
  - Unrealistic targets are too easily set
  - Difficult to secure public consent to realistic targets.

Open Access

- Why Single Buyer Model?
  - Little scope for generation competition initially
  - Interim assistance to TRANSCO to keep tariff down.
  - No bar on supplementary purchases by DISCOMs.
  - Limited to five years.

... Open Access

- Open access at distribution level futuristic, if desirable in the long term
  - Privatisation must be made attractive for investors
  - Will competing price packages be available?
  - Mechanisms & formats—are they available?
  - Cross subsidy can't be removed immediately
  - Value of consumer interface in present situation:
    - Mere supplier responsible only for energy billed to own customers, not motivated to reduce losses
    - Supply quality—party responsible would become faceless.

Privatisation issues and lessons:

- Reform is painful, requires political will:
  - Time frame therefore vital:
    - Visible benefits within Government's term of office.
    - This was the main reason for not going through the World Bank original completion target was end 2000.

... issues and lessons:

- Government decision-making processes work poorly in absence of a 'template' or success model:
  - Possible only with support from the top.
- Therefore it is necessary to present implications of inadequate reform, without privatisation, honestly:
  - The issues are easily fudged by understating losses or overstating probable achievement

… issues and lessons: Role of Regulator

- Positive role: reasonability in considering data submitted in two tariff orders gave a very positive signal to investors.
- Policy Directions became necessary after failure to get tariff setting principles fixed by Commission.
- Opening losses set lower.

Importance of staff

- Staff accepted inevitability of reforms in the face of strong political will.
  - Enlightened union leadership;
  - Knew opposition to reforms would provoke public hostility
- Continuous grievance removal effort throughout.
- Seminars and visits to other states
- Engineers' role generally positive.
- Tripartite Agreement protects interests

Delhi model not necessarily to be replicated:

- Sensitivity of power situation in the Capital strengthened political will:
  - Elsewhere, more consumer activism may help.
- State Governments will not generally be as willing and able to budget transitional assistance.
- Consumer profile: agricultural and rural areas.
- Dearth of potential investors
  - Limited number of Indian companies;
  - Poor awareness elsewhere, negative publicity doesn't help.

Theoretical dangers pointed out:

- Remaining regulatory uncertainties.
- Motivation to invest excessively in AT&C loss reduction.
- Undisciplined expenditure, inadequate cost and productivity improvement.

Necessary to get the focus right:

- Other uncertainties insignificant compared with loss reduction target uncertainty:
  - Investors' perception the best guide;
- In the present situation, loss reduction not primarily a function of investment.

Thank You

PROPOSED MANAGEMENT LEASE CONTRACT FOR KATHMANDU VALLEY URBAN WATER SUPPLY AND SEWERAGE

ISSUES AND CHALLENGES ENCOUNTERED DURING PREPARATORY PHASE

Issues (1)

Time-frame for the preparatory work

- Setting out clear overall policies and strategies by the government

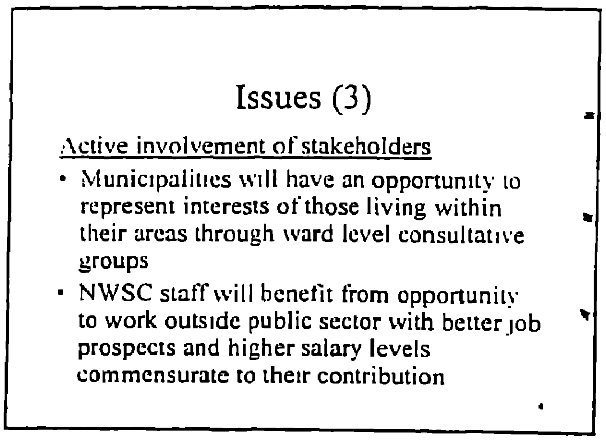
Adequate funding and time period

- Overall exercise may be expected to take two years
- Adequate funds to the tune of USD 1.5 million

Issues (2)

Active involvement of stakeholders

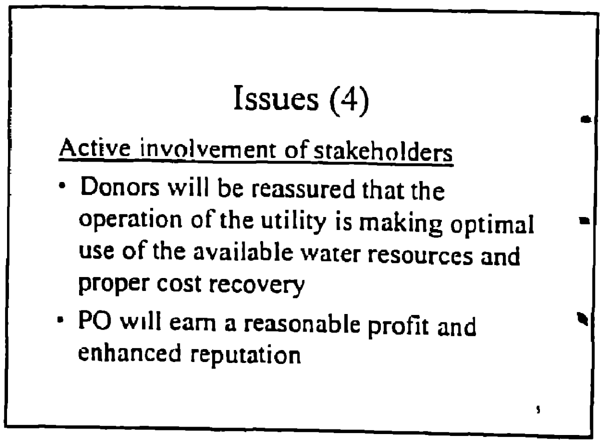
- Consumers will have improved water supply and pay more for better and reliable services
- HMGN will have a system that is operated effectively and efficiently being paid by consumers through realistic tariffs within a reasonable timeframe



Issues (3)

Active involvement of stakeholders

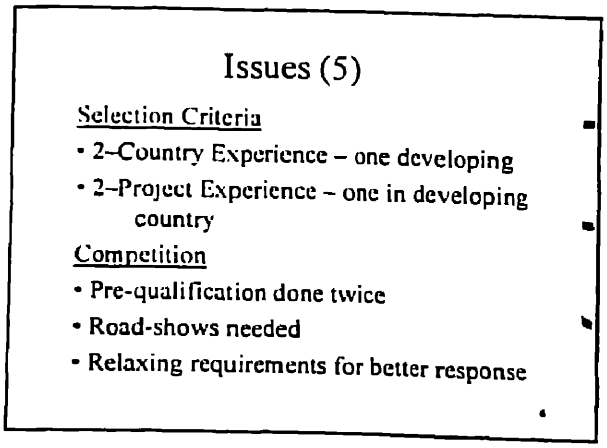
- Municipalities will have an opportunity to represent interests of those living within their areas through ward level consultative groups
- NWSC staff will benefit from opportunity to work outside public sector with better job prospects and higher salary levels commensurate to their contribution



Issues (4)

Active involvement of stakeholders

- Donors will be reassured that the operation of the utility is making optimal use of the available water resources and proper cost recovery
- PO will earn a reasonable profit and enhanced reputation



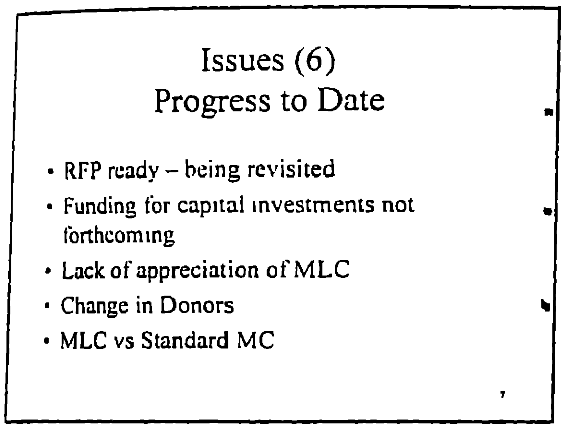
Issues (5)

Selection Criteria

- 2–Country Experience – one developing
- 2–Project Experience – one in developing country

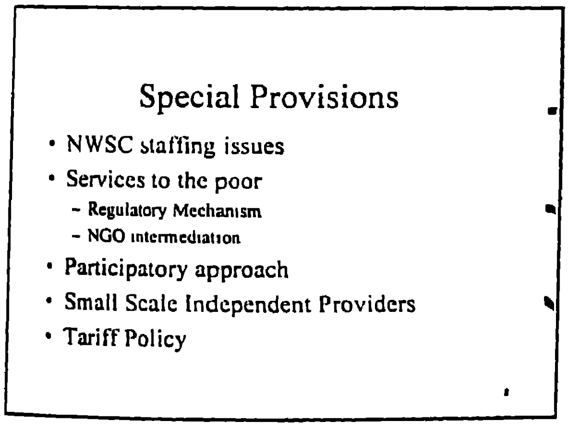
Competition

- Pre-qualification done twice
- Road-shows needed
- Relaxing requirements for better response



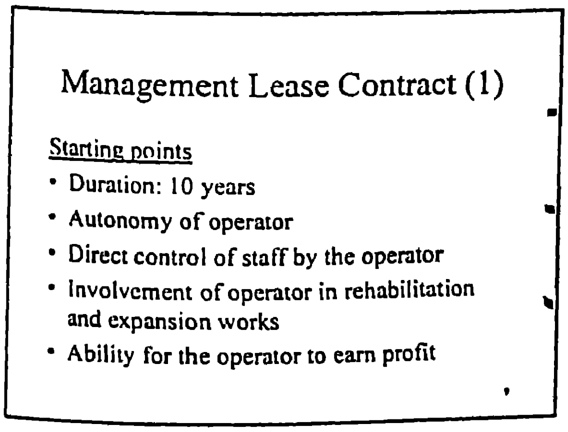
Issues (6)
Progress to Date

- RFP ready – being revisited
- Funding for capital investments not forthcoming
- Lack of appreciation of MLC
- Change in Donors
- MLC vs Standard MC



Special Provisions

- NWSC staffing issues
- Services to the poor
  - Regulatory Mechanism
  - NGO intermediation
- Participatory approach
- Small Scale Independent Providers
- Tariff Policy



Management Lease Contract (1)

Starting points

- Duration: 10 years
- Autonomy of operator
- Direct control of staff by the operator
- Involvement of operator in rehabilitation and expansion works
- Ability for the operator to earn profit

Management Lease Contract (2)

Institutional framework

HMGN	Policy formulation Funding
Regulatory Board	Interests of consumers Tariff approval Monitoring asset owner and operator
Asset Owner	Dev Of WS & S in KV Debt Service
Operator	O & M Rehabilitation Works

Management Lease Contract (3)

Responsibilities of operator

- Technical management
- Commercial management
- Administrative and Financial management

Management Lease Contract (4)

Technical Management (1)

- O & M of water supply and sewerage system
- Provision and replacement of operating assets including metering
- Leak detection and control
- Provision of new connections
- Preparation of digitized maps

Management Lease Contract (5)

Technical Management (2)

- Carry out rehabilitation works
  - from own sources (US$ 1 to 2 million)
  - as a contractor (US$ 3 to 4 million)
  - procure on behalf of HMGN (US$ 5 to 6 million)

Management Lease Contract (6)

Commercial Management (1)

- Implement:
  - computerized billing
  - consumer information system
- Billing and collection
- Consumer relations
- Regularization of illegal connections

Management Lease Contract (7)

Commercial Management (2)

- Service to the poor
  - special connection programs
  - liaison with NGO's and ward level bodies
  - allow small scale providers to operate

Management Lease Contract (8)

Operator's investments

- Take over from NWSC
  - operating assets
  - consumables and spare parts
- Procurement of new operating assets incl. water meters
- Operator's share in rehabilitation works
- Working capital

Management Lease Contract (9)

Administrative and Financial Management

- Human resources development
- Implement computerized financial/ MIS systems
- Prepare annual:
  - business plans
  - investment plans
- Reporting to the Regulatory Board and Asset Owner

Management Lease Contract (10)

Performance criteria

- Maintenance of the assets
- Water quality
- Coverage
- Technical efficiency/reduction of losses
- Commercial efficiency/collection of bills
- Implementation of rehabilitation works
- Service level
  - continuity and reliability of supply
  - consumer metering

Management Lease Contract (11)

Performance based remuneration of operator

- Water supply · Operator's rate for each m^3 of water produced adjusted for actual technical and commercial efficiencies
- Sewerage Fixed rate per paying customer
- Works:
  - Normal profit over the works for which the operator acts as a contractor
  - Handling fee of 5% over de value of the works procured on behalf of HMGN

Management Lease Contract (12)

Revision of operator's rate

- Annual by application of indexing formula

Re-negotiation of operator's rate

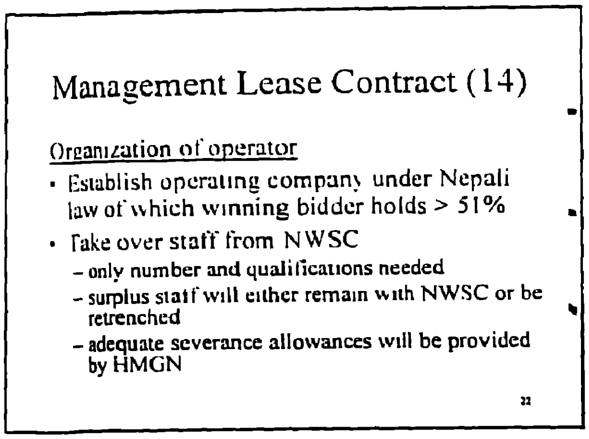
- At moment of commissioning of new sources

Management Lease Contract (13)

Remuneration of asset owner

- Tariff revenue from water supply and sewerage minus operator's remuneration

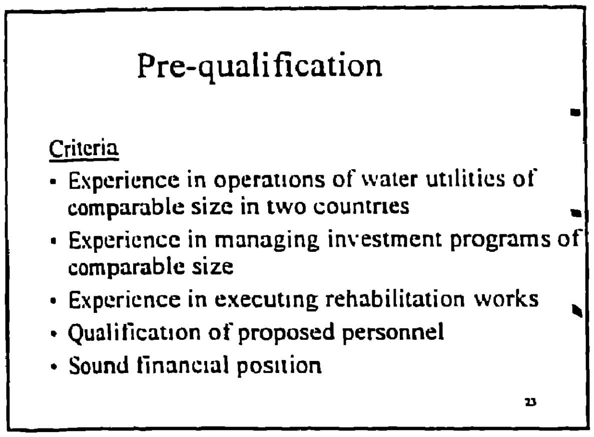
N.B. In case (initially) the tariff revenue is not sufficient to cover the operator's remuneration then an operating subsidy will be granted



Management Lease Contract (14)

Organization of operator

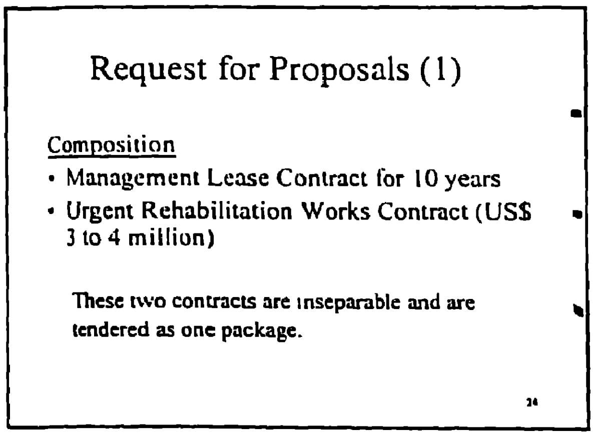
- Establish operating company under Nepali law of which winning bidder holds > 51%
- Take over staff from NWSC
  - only number and qualifications needed
  - surplus staff will either remain with NWSC or be retrenched
  - adequate severance allowances will be provided by HMGN



Pre-qualification

Criteria

- Experience in operations of water utilities of comparable size in two countries
- Experience in managing investment programs of comparable size
- Experience in executing rehabilitation works
- Qualification of proposed personnel
- Sound financial position



Request for Proposals (1)

Composition

- Management Lease Contract for 10 years
- Urgent Rehabilitation Works Contract (US$ 3 to 4 million)

These two contracts are inseparable and are tendered as one package.

Request for Proposals (2)

Steps in bidding process

- Sending of draft RFP to pre-qualified bidders
- Pre-bid meeting
- Amendment of draft RFP
- Sending of final RFP to bidders
- Submission of first stage technical bids
- Clarification meetings with bidders
- Submission of second stage bids
- Selection of successful bidder/contract award

Request for Proposals (3)

Two stage bidding procedure

- First stage: technical bid only
- Second stage updated technical bid and a financial bid

Selection criteria

- Technical bid· pass or fail
- Financial bid lowest operator rate (NRs/m^3 water produced)

NB

  - Sewerage rate is fixed in the contract
  - Value of urgent rehabilitation works is fixed in the contract

Setting Distribution Tariffs

Martin A. Rodríguez Pardina

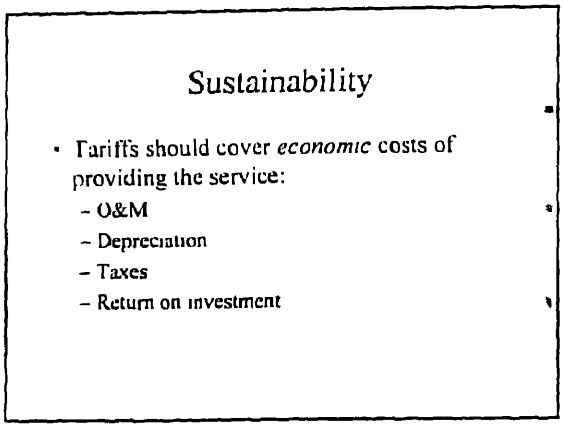
September 2002

Topics

- Objectives
- Instruments
  - Tariff regime
  - Tariff structure
- Cost of Capital

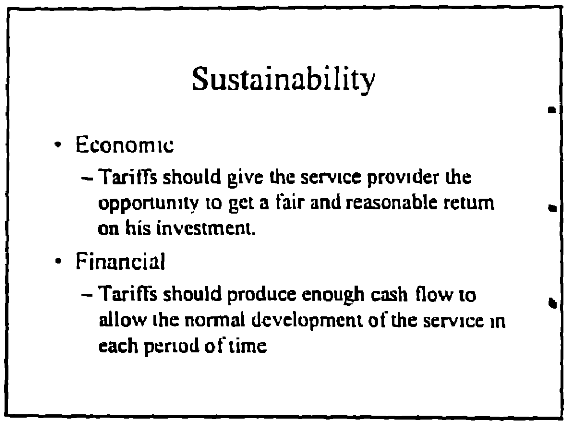
Main Objectives

- Sustainability
  - Attract capital to the industry
  - Fair and reasonable rate of return
- Efficiency
  - Allocative
  - Productive
- Equity
  - Participation
  - Discrimination



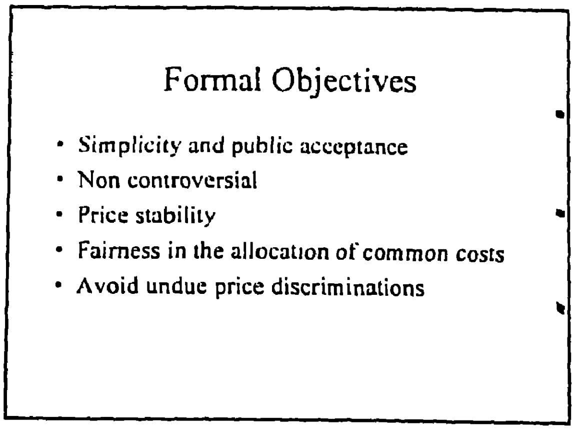
Sustainability

- Tariffs should cover *economic* costs of providing the service:
  - O&M
  - Depreciation
  - Taxes
  - Return on investment



Sustainability

- Economic
  - Tariffs should give the service provider the opportunity to get a fair and reasonable return on his investment.
- Financial
  - Tariffs should produce enough cash flow to allow the normal development of the service in each period of time



Formal Objectives

- Simplicity and public acceptance
- Non controversial
- Price stability
- Fairness in the allocation of common costs
- Avoid undue price discriminations

Formal Objectives

- Relevance:
  - A good balance of this objectives is required to ensure long term sustainability.
  - Failure to achieve this objectives can result in an unnecessary increase in the risks perceived by investors.

Objectives Trade-Offs

- Efficiency vs Equity
  - Price discrimination is efficient but is perceived as unfair by most people.
- Productive efficiency vs Allocative Efficiency
  - Costs and tariffs equalization reduces all incentives to cost minimization
- Allocative efficiency vs. Sustainability
  - Under natural monopoly marginal costs are lower than average costs.

Objectives Trade-Offs

- The existence of multiple objectives and trade-offs implies the need of regulators with high degree of
  - Expertise
  - Transparency
  - Accountability

Objectives and Instruments

- Objectives
- Sustainability
- Efficiency
  - Allocative
  - Productive
- Equity

- Instruments
- Tariff level
- Tariff
  - Structure
  - Regime
- Tariff Structure

Tariff Regimes

- Rate of Return (Cost of Service)
- Price Caps (RPI-X)
- Hybrid alternatives
  - Pass-through mechanisms
  - Menu of options

Rate of Return I

- The total cost (including return on investment) of providing the service in a base year is determined.
- Total costs are allocated among services and customer categories
- Using demand estimates tariffs are desinged to recover total costs.

Rate of Return II

- Sustainability
  - High The firm is protected from most risks by tariff adjustments
- Productive efficiency
  - Low No incentive to reduce costs as this is translated to users as lower tariffs
- Allocative efficiency
  - High. Tariffs track (accounting) costs permanently

Rate of Return III

- Tariff review -> endogenous
  - When the profitability of the firm departs from the target set by the regulator
  - Depends on the behavior of the firm (costs are under the firm control)
  - Reduces all incentive to cost minimization as cost reduction are translated immediately to users through lower tariffs

Price Cap I

- The firm faces a maximum price that it can charge for its services
  - Basket of services
  - Individual prices
- All cost reductions are (temporarily) appropriated by the firm as a higher rate of return.
- Mimics a competitive market

Price Cap II

- Sustainability
  - Intermediate The firm faces at least some cost risk
- Productive efficiency
  - High incentives to cost minimization as the firm can keep all savings
- Allocative efficiency
  - Intermediate. Incentives to cost minimization are achieved by creating a gap between costs and prices

Price Cap III

- Tariff review -> exogenous
  - Tariffs are review at pre-determined periods of time (typically five years)
  - Review is independent of the behavior of the company.
  - Forward looking trying to preserve incentives for cost minimization

Regulatory Regime

- Different regimes imply different incentives and risks for the firm
  - Cost Plus Low incentives Low risk
  - Price Cap High incentives High risk
  - Hybrid Regimes
    - Path through
    - Self selection

Regulatory Regime and Risk

Regime	Average Beta
High	0 57
Intermediate	0 41
Low	0 35

Source Alexander, Mayer, Weeds (1996)

- In Argentina, reduction from 0 57 to 0 35 in Beta implies a diminution from 14.8% to 13.8% in the Cost of Capital and a reduction of 5% in the required revenues of an electric company

---

Pass-Through

- Cost risk
  - An optimal allocation of risks might imply the need to Path-through some costs to final users:
  - Cost which are:
    - Volatile, out of control of the firm and a sizable part of total costs.
  - Examples: gas and electricity purchase by distribution companies in the UK

Hybrid Mechanism

Options Menu

Telecommunications USA

		Return	
Ef. Factor	**Min**	**50/50 Sharing**	**Max**
X = 4 0%	10.2%	12.2% to 13 2%	13.2%
X = 4 7%	10.2%	12 2% to 16.2%	16.2%
X = 5.3%	None	None	None

Tariff Structure

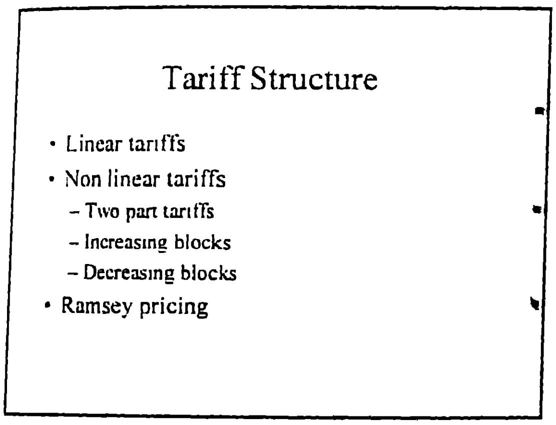
- Charges
  - Fix
  - Variable
  - Expansion
- Optimal structure depends on:
  - Nature of costs
  - Demand characteristics

Costs

- Direct
  - Fix
  - Variable
  - Expansion
- Externalities
  - Positive
  - Negative

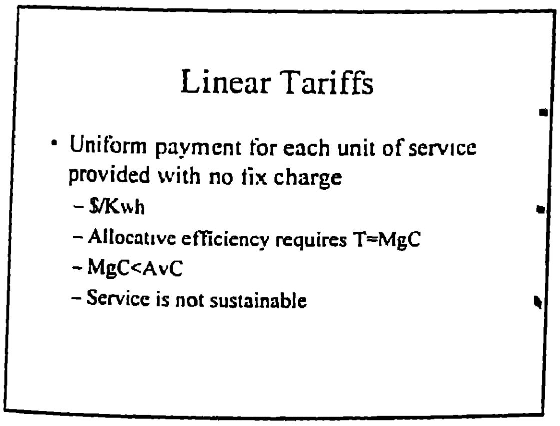
Information

- Cost information is a basic requirement for efficient tariff determination
- Information must be
  - Detailed (by service, customer type, etc)
  - Homogeneous (when there are different firms)
  - Timely



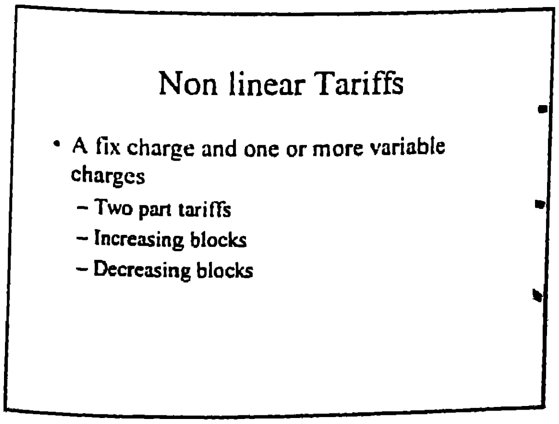
Tariff Structure

- Linear tariffs
- Non linear tariffs
  - Two part tariffs
  - Increasing blocks
  - Decreasing blocks
- Ramsey pricing



Linear Tariffs

- Uniform payment for each unit of service provided with no fix charge
  - $/Kwh
  - Allocative efficiency requires T=MgC
  - MgC<AvC
  - Service is not sustainable



Non linear Tariffs

- A fix charge and one or more variable charges
  - Two part tariffs
  - Increasing blocks
  - Decreasing blocks

Two part tariffs

- Fix charge
  - Covers fix costs
- Variable charge
  - = Marginal Cost
- Seeks allocative efficiency but can be against equity. High fix charge can exclude some customers from the service

Increasing block tariffs

- Price per unit increases as consumption increases
  - Seeks to increase equity by charging more those customers that have higher consumption (used as a proxy of higher income)
  - Allocative inefficiency. In general cost fall with larger consumptions.

Decreasing block tariffs

- Price per unit decreases as quantity consumed increases
  - Allocative efficiency. Tariffs reflect cost patterns
  - Can go against equity as high consumption can be related to high income and less vital uses of the service

Tariff Structure

- Demand risk
  - In RPI-X regimes a combination of price and revenue caps can mimic the cost structure of the firm minimizing the demand risk.
  - Bidding mechanism for toll roads in Chile is aimed at minimizing demand risk
    - Bid for the minimum present value of revenues Once that PV is reached the concession ends

Case Study

- Distribution Tariffs in Argentina
  - Legal Framework
  - Regulatory Regime
  - Tariff Structure
  - Non-technical losses

Tariffs: General Principles

- Tariffs for transport and distribution must be just and reasonable according to these guide-lines
  - Must cover reasonable operating costs, taxes, amortisation and a rate of return
    - Reasonable for those firms operating efficiently
    - Similar to that obtained by activities with similar or comparable risk at a national and international level
    - Take into account cost differentials among different services
- For distributors it should include a term representing the costs of purchasing electricity in the wholesale market
- Ensure the minimum reasonable cost for users compatible with security of supply

Tariff Regime

- Lasts for 5 years. The initial one will last for 10 years , in accordance with the following principles
  - Fix initial tariffs for each type of service
  - Tariffs will represent maximum prices for each kind of service
  - This price will be determined by ENRE with an indexation clause adjusted by a factor to encourage efficiency and investment
  - It will be adjusted to any change in costs which are beyond the control of firms
  - Costs from one service can not be recovered through tariffs to other users

(Article 42)

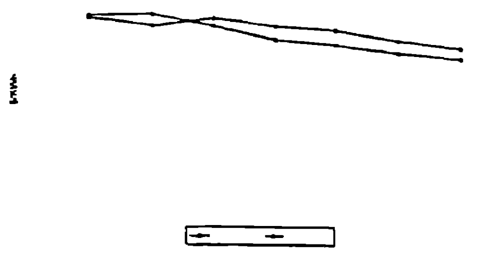
Tariff Regime - cont

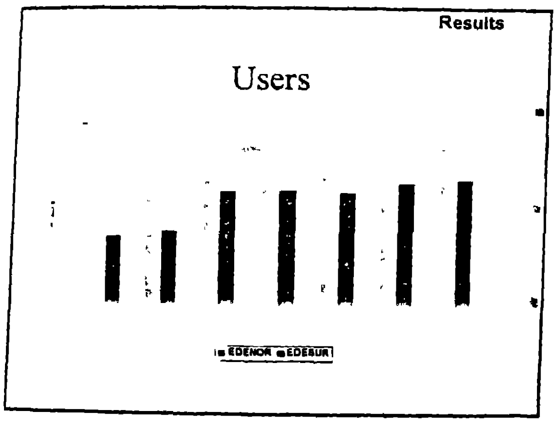
- Transport and distribution tariffs in real terms will be subject to annually decreasing caps

(Article 49)

Results

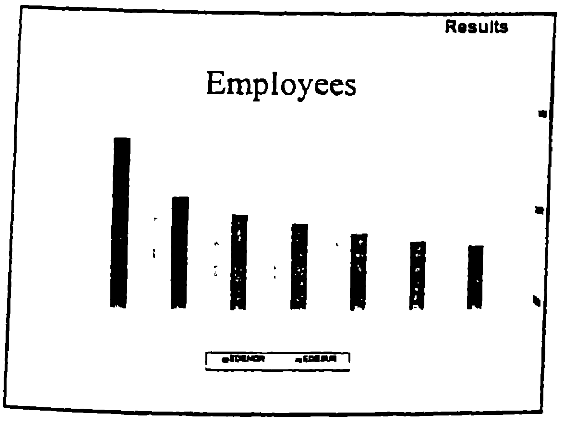
Average Price





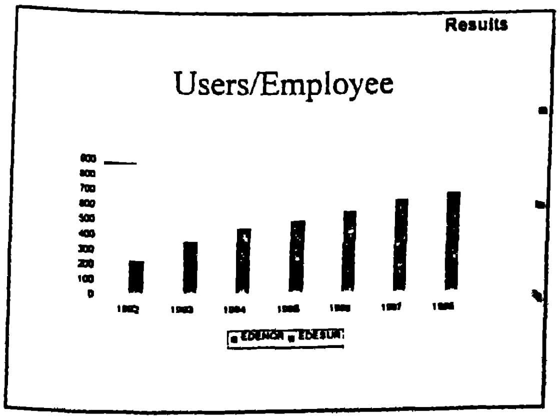
Results

Users



Results

Employees

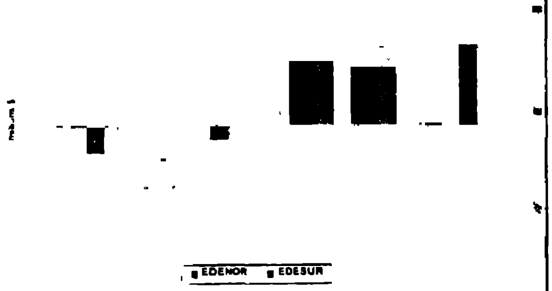


Results

Users/Employee

Results

Net Profit

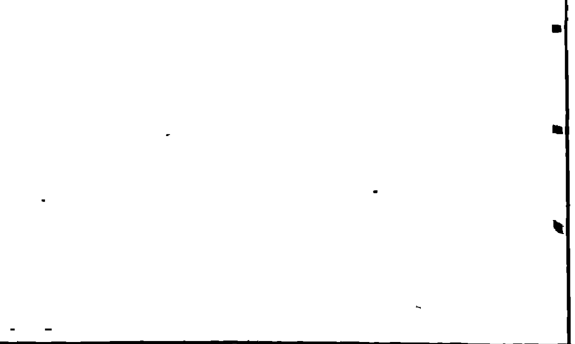


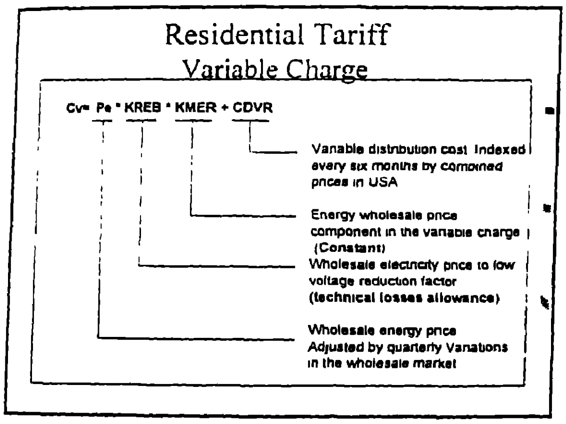
Tariff Structure

- Tariff 1 - Small Demands
  - Residential
    - Less than 300 kWh bimonthly
    - More than 300 kWh bimonthly
  - General
    - Less than 1600 kWh bimonthly
    - Between 1600 and 4000 kWh bimonthly
    - More than 4000 kWh bimonthly
  - Public Lighting
- Tariff 2 - Intermediate Demands
  - Capacity charge + Variable energy charge
- Tariff 3 - Large Demands
  - Capacity charge + Variable energy charge
    - Divided in High, Medium and Low voltage

Residential Tariff

Fixed Charge

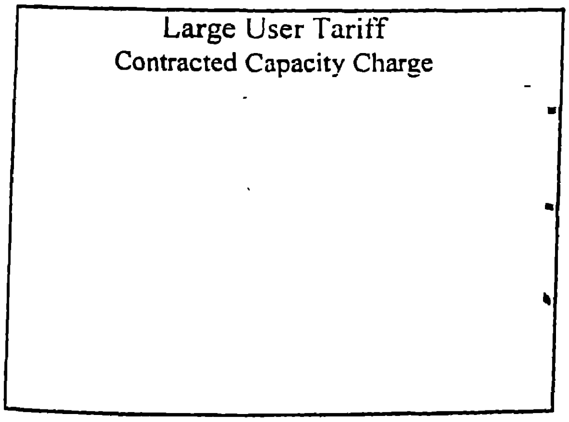




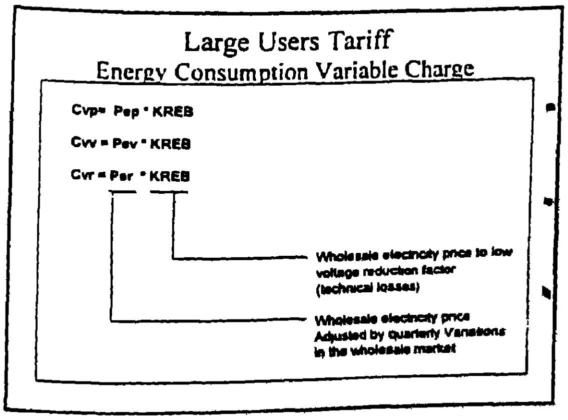
Residential Tariff
Variable Charge

Cv= Pe * KREB * KMER + CDVR

- CDVR: Variable distribution cost Indexed every six months by combined prices in USA
- KMER: Energy wholesale price component in the variable charge (Constant)
- KREB: Wholesale electricity price to low voltage reduction factor (technical losses allowance)
- Pe: Wholesale energy price Adjusted by quarterly Variations in the wholesale market



Large User Tariff
Contracted Capacity Charge



Large Users Tariff
Energy Consumption Variable Charge

Cvp= Pep * KREB

Cvv = Pev * KREB

Cvr = Per * KREB

- KREB: Wholesale electricity price to low voltage reduction factor (technical losses)
- Per: Wholesale electricity price Adjusted by quarterly Variations in the wholesale market

Distribution Costs

Tariff Structure

	Dist C Tariff	Purch Tariff
• Tariff 1 - R	43.9%	56.1%
– Tariff 1 - R1	55.8%	44.2%
– Tariff 1 - R2	31,8%	68.2%
• Tariff 1 - G	50.9%	49.1%
– Tariff 1 - G1	61.3%	38.7%
– Tariff 1 - G2	47.5%	52.5%
– Tariff 1 - G3	28.4%	71.6%
• Tariff 1 - AP	29.7%	70.3%
• Tariff 2	44.4%	55.6%
• Tariff 3	35.3%	64.7%
– Tariff 3 - LV	49.8%	50.2%
– Tariff 3 - MV	27.0%	73.0%
– Tariff 3 - HV	4.4%	95.6%
Total	41.2%	58.8%

Passthrough of Wholesale Prices

- **Spot Prices**
  - **Determined on a hourly basis in the wholesale market as the marginal cost of the last generator who entered the merit order dispatch**
- ***Seasonal Prices:***
  - **determined every 3 months by CAMMESA as the average of expected spot prices for the following quarter**

Passthrough of Contracts

- **Transferred Contracts**
  - **Contracts signed before the companies where privatized have a complete pass-through to tariff.**
- **New Contracts**
  - **For new contracts there is a cap equal to the seasonal price in the pass-through**

Contracts: Problems

- The existence of a seasonal price limits the spot price volatility so there is little incentive to sign contracts
- The cap on the pass-through also limits the incentives to sign contracts Alternatives:
  - Economic purchase clause (UK)
  - Allow the average contract price
  - Competitive tender for new contracts

Distribution and Supply

- Distribution (use of wires) natural monopoly with regulated tariffs
- Supply (comercialization) is a potentially competitive activity as there are no large sunk costs involved.
  - Commercial (not physical) by-pass of the distribution company by large users.

Commercial Bypass by Large Users

- Large Users (peak demand over 100 kW) have the right to buy their energy from the Wholesale market
  - Contracts with Generators
  - Spot price
- For use of the wires they pay the distribution company a regulated tariff

Use of Wires Tariff

- Distribution Tariff
  - $Td = Pw\,(1+d) + DC$
- Use of Wires Tariff
  - Large User buy its own energy so the cost for the distribution company is reduced by Pw
  - For Distribution and Supply to be finacially independent the use of wires tariff is
    - $Tuw = Td - Pw$
    - $Tuw = Pw\,d + DC$

Losses

- Before privatization technical and commercial losses in SEGBA amounted to near 25% of total energy
- Political decision to allow only technical losses to be included in the tariff leaving private concessionaires to solve the problem of commercial losses.

Commercial Risk

- Non-payment risk
  - Non technical losses in electricity distribution in Argentina up to 20% at the moment of privatization.
  - Initially total responsibility transferred to firm (only technical losses considered in the tariff)
  - After a few months the firm came up with a plan involving government (federal, provincial and municipal), the firm and the users which was accepted by the regulator.

Commercial Losses

- Industrial users Illegal connections problem solved within the first year of the concession.
- Low income neighborhoods Meter tampering Problem solved in a 90% within the first 18 months of the concession.
- Shanty towns. No meters installed. Social problem. Agreement with federal, provincial and municipal authorities.

Solution for Shanty Towns

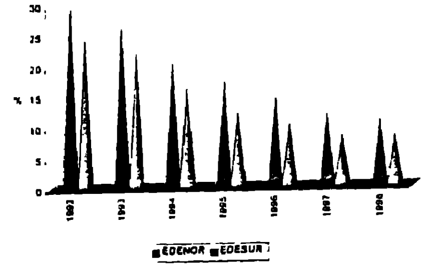
- 4 years agreement between Private Firms, National State, Buenos Aires Province and local Municipalities
- Private firms
  - Resign to claim for past consumption
  - Installation of communal meters within 120 days
  - Compromise not to cut power to normalized users

Solution for Shanty Towns

- Municipalities
  - Carry a Census
  - Build streets
  - Promote creation of village representatives commission
- Bs.As. Province and Federal Government
  - Creation of a special fund to be destinated to cover lack of payment by low income users.
    - Federal government Value added tax on new users
    - Buenos Aires Taxes on power consumption

Results

Energy Loss



Subsidies

- Cross-subsides forbiden by law.
- Direct subsidies to low income pensioners and charities.
  - The costumer is invoiced 50% of the tariff
  - The difference is covered by the federal government
    - The anual budget has to include the funds to cover the subsidy

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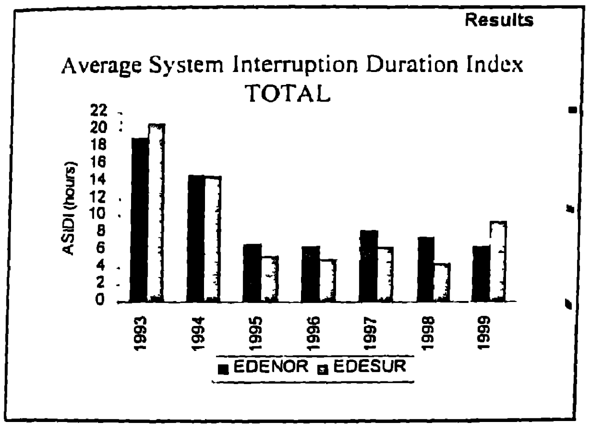
Regulation

DISTRIBUTION
Quality Controls

- Three Stages
  - Stage 0 12 months of grace period
  - Stage 1 36 months measures at MV level
  - Stage 2 Measures at each costumer level
- Quality of Technical Service
  - Frequency and Duration of Interruptions
- Quality of Technical Product
  - Voltage Variations
- Quality of Commercial Service
  - Handling of customers complaints
  - Connection times - Estimated billing



Results

Average System Interruption Duration Index
TOTAL

Conclusions

- The entry of private participants requires to design good mechanisms for risk allocation at the sector level as well as in each one of the particular stages.
- Tariff regime, structure and level are key elements in the regulatory process and the acheivement of the regulatory objectives.

India's Urban Water Sector: Financing Institutional Reform

S. Banerjee
Visiting Fellow
National Institute of Urban Affairs
New Delhi

September 21, 2002

India's Urban Water Sector: Financing Institutional Reform

- Urban Scenario
- Status of Urban Water Sector
- Constitutional Framework
- Financing Urban Water Sector Schemes
- Resource Gap
- Augmenting Financial Resources of Municipalities
- Urban Water Sector: Institutional Reforms
- Financing Institutional Reform: The City Challenge Fund

Urban scenario

- Urban Population in 2001 - 285 million
- Net Addition to Urban Population during 1991-2001 - 68 million
- Number of Urban Agglomerations - 4378
- Number of Metropolitan Cities (population > 1 million) - 35

- **Second Largest Urban System in the World**

Urban scenario

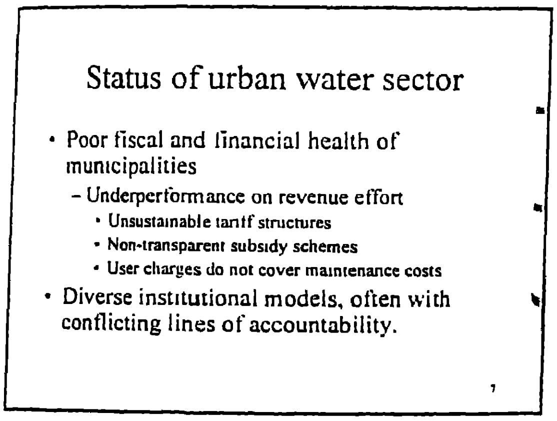
- Urban population living below poverty line - 30-40%
- Contribution of urban sector to national income - 60%
- **National economic growth and poverty reduction efforts will be increasingly determined by the productivity of cities and towns**

Status of urban water sector

- 88% of urban population have access to safe drinking water (31.03.2000 – CPHEEO)
- 'ACCESS' does not imply
  - Adequacy
  - Regularity
  - Equity

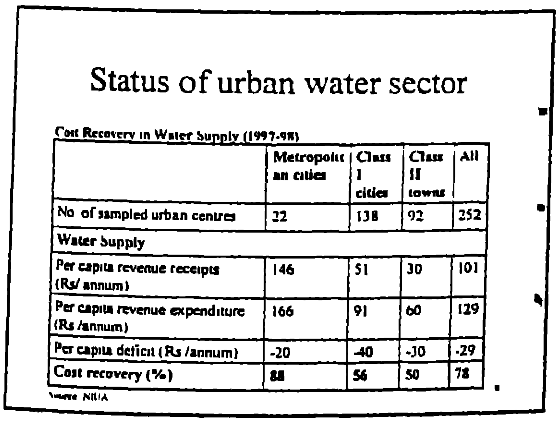
Status of urban water sector

- Urban water supply characterised by **poor service delivery:**
  - Poor transmission and distribution
  - Unaccounted for water ranging from 25-50%
  - Low pressure, intermittent supply, back siphoning leading to contamination of water in the distribution system



Status of urban water sector

- Poor fiscal and financial health of municipalities
  - Underperformance on revenue effort
    - Unsustainable tariff structures
    - Non-transparent subsidy schemes
    - User charges do not cover maintenance costs
- Diverse institutional models, often with conflicting lines of accountability.



Status of urban water sector

Cost Recovery in Water Supply (1997-98)

	Metropolitan cities	Class I cities	Class II towns	All
No of sampled urban centres	22	138	92	252
Water Supply				
Per capita revenue receipts (Rs/ annum)	146	51	30	101
Per capita revenue expenditure (Rs /annum)	166	91	60	129
Per capita deficit (Rs /annum)	-20	-40	-30	-29
Cost recovery (%)	88	56	50	78

Source NIUA

Status of urban water sector

- Consequences
  - Limited creditworthiness arising from opaque financial and accounting system leading to limited access to private finance
  - Lack of accountability inherent in existing institutional models leading to poor service delivery
  - Both factors are preventing India's urban sector from playing its potential role in national economic growth and poverty reduction.

Constitutional framework

- 'Local Government' finds place in 'List II' or 'State' List in the Constitution of India
- Constitution (74th Amendment) Act, 1992

- Art 243Q	Recognises 'Municipalities' as a third tier of government
- Art 243W (Twelfth Schedule)	Lists 'water supply for domestic, industrial and commercial purposes' as a function entrusted to municipalities
- Art 243X	State legislatures may by law, authorise municipalities to levy, collect and appropriate taxes, duties, tolls and fees

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Financing urban water sector scenario

- Investments in urban water supply projects are presently funded by
  - Tax and non-tax resources of Municipalities
  - Fiscal transfers from States to Municipalities
  - Centrally Sponsored Schemes
  - Loans from Financial Institutions (HUDCO/LIC)
  - External assistance

Financing urban water sector schemes

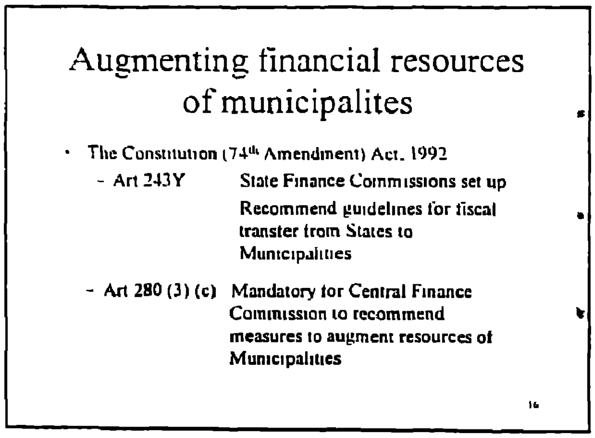
- Increasing dependence of Municipalities on States for for financing capital works in urban water supply schemes
- Owing to budgetary constraints, States prefer furnishing guarantees for loan to Municipalities by F.I.s.

Financing urban water sector schemes

- Owing to inability of Municipalities to discharge their debt servicing obligations, F.I.s. invoke State guarantees
- States having assumed repayment obligations, para-statal bodies design and execute water supply schemes and then hand them over to Municipalities for maintenance

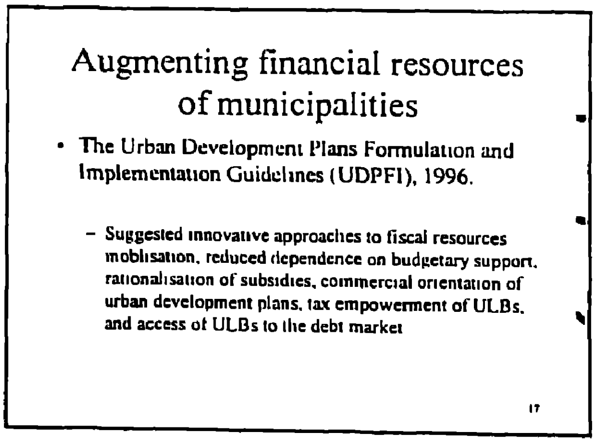
Resource gap

• Resources required for capital investments in urban water, sanitation & roads during 1996-2001 (India Infrastructure Report, 1996)	Rs. 28338 crores per annum
• Annual expenditure incurred by central, state, and local governments on urban development sector in 1997-98	Rs. 9772 crores
• Resource gap in 1997-98	Rs. 18566 crores



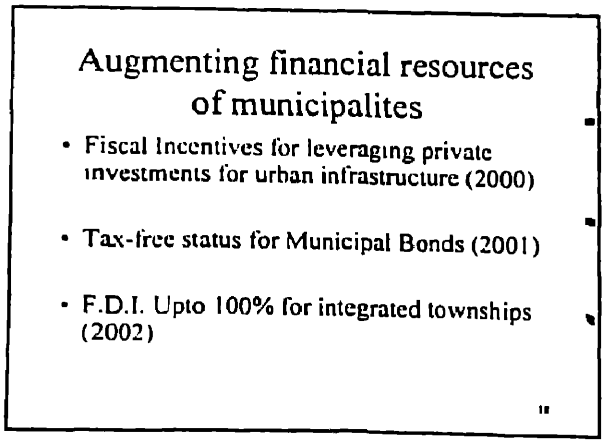
Augmenting financial resources of municipalites

- The Constitution (74th Amendment) Act, 1992
  - Art 243Y State Finance Commissions set up
Recommend guidelines for fiscal transfer from States to Municipalities
  - Art 280 (3) (c) Mandatory for Central Finance Commission to recommend measures to augment resources of Municipalities



Augmenting financial resources of municipalities

- The Urban Development Plans Formulation and Implementation Guidelines (UDPFI), 1996.
  - Suggested innovative approaches to fiscal resources mobilisation, reduced dependence on budgetary support, rationalisation of subsidies, commercial orientation of urban development plans, tax empowerment of ULBs, and access of ULBs to the debt market



Augmenting financial resources of municipalites

- Fiscal Incentives for leveraging private investments for urban infrastructure (2000)
- Tax-free status for Municipal Bonds (2001)
- F.D.I. Upto 100% for integrated townships (2002)

Urban water sector: institutional reforms

- Service delivery in the urban water sector cannot be improved by a few additional water projects or by tariff reforms alone. It will require comprehensive institutional reforms and restructuring of the urban water sector.

Urban water sector: institutional reforms

- Existing structure of water sector utilities do not provide for separate roles for :
  - policy formulation
  - delivery
  - Regulation
- Result: lack of accountability.
- The purpose of reform is to assign responsibility for policy formulation, delivery, and regulation to different entities to create transparent checks and balances in the system

Urban water sector : institutional reforms

- Policy Formulation, which involves asset ownership, should be with the Municipal body as it has implications for water as a public good and health externalities

Urban water sector: institutional reforms

- Delivery could be entrusted to a corporate body with the task of supplying water in a professional and business like manner, with incentives for responding to customer needs
  - If this involves engaging the private sector, it could be either in the form of management contracts or concessions These are differentiated by the level of private capital investment and risk undertaken
  - The choice of the corporate entity will be with the Municipal body

Urban water sector: institutional reforms

- Regulation - an independent Regulator is necessary to ensure that the corporate delivery entity does not act as a monopolist.

Financing Institutional Reform: The City Challenge Fund

- Institutional reforms in the urban water sector may entail transaction costs during transition
  - Cost of preparing reforms
  - Implementing regulatory bodies
  - Tariff re-balancing
  - Creating safety nets for the poor
  - Labour adjustments
- Leaving cities to finance these costs themselves will delay or prevent implementing reforms

Financing Institutional Reform: The City Challenge Fund

- The Central Government, therefore, announced setting up of The CITY CHALLENGE FUND to "support cities fund transitional costs of moving towards sustainable and creditworthy institutional system of municipal management and service delivery".

Financing Institutional Reform: The City Challenge Fund

- The City Challenge Fund:
  - Will encourage cities to restructure and achieve sustained service delivery and creditworthiness
  - Interested cities will make an initial general application to the Central Government indicating their commitment to the objectives of the CCF. On approval, the city will prepare and submit a detailed plan for restructuring and reform

Financing Institutional Reform: The City Challenge Fund

- Restructuring plans of cities must be the result of local priorities and must include
  - An analysis of risks associated with the restructuring plan
  - The proposed size, timing of disbursement and total length of application of the restructuring grant within the plan
  - Mobilisation of other resources
  - Proposed disbursement benchmarks, readily verifiable
  - Management plan for implementing the Restructuring Plan

Financing Institutional Reform: The City Challenge Fund

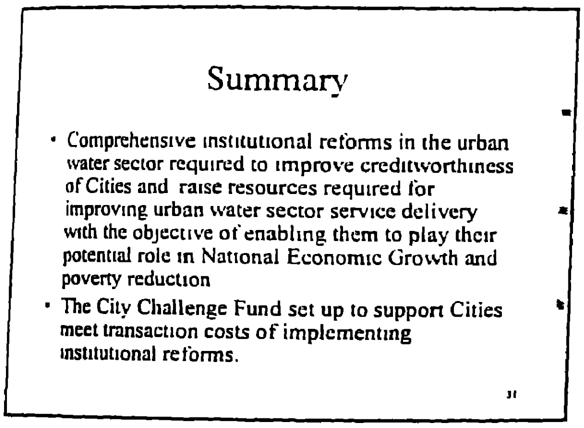
- Restructuring Plan will be assessed by independent experts based on whose recommendations, the Central Government will disburse the grant.
- CCF will be disbursed as budgetary support, payable in tranches, against verifiable benchmarks proposed in the Restructuring Plan.

Financing Institutional Reform: The City Challenge Fund

- Periodic monitoring by independent assessors.
- Non-compliance with terms and conditions of the court will lead to Central Government implementing clearly enunciated remedies embodied in the grant agreement document

Summary

- In an increasingly urbanising India, the water sector is characterised by poor service delivery.
- Cities are unable to raise requisite resources for investments in urban water supply systems on account of their lack of creditworthiness, despite significant political, fiscal and financial decentralisation.



Summary

- Comprehensive institutional reforms in the urban water sector required to improve creditworthiness of Cities and raise resources required for improving urban water sector service delivery with the objective of enabling them to play their potential role in National Economic Growth and poverty reduction
- The City Challenge Fund set up to support Cities meet transaction costs of implementing institutional reforms.

Non-Price Regulation: Ensuring Quality of Service

Clive Harris

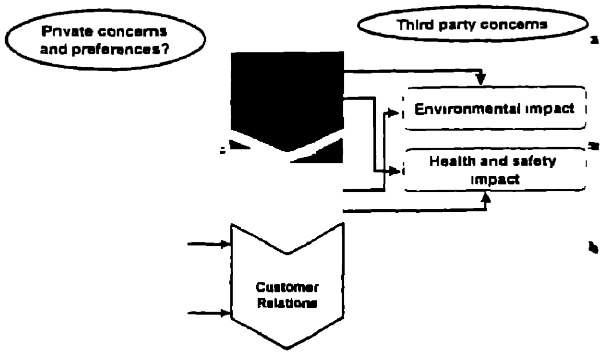
The World Bank

Outline

- Why (and when) is quality a regulatory issue?
- Regulatory instruments
- Implications for agency design and processes

Why Worry About Quality?

- Across the infrastructure sectors, concerns about:
  - Quality of service to customers
    - Basic health and safety – e.g. potability of drinking water, safety of electricity connections, safety of rail travel
    - Customer service and responsiveness
  - External impacts of production processes
    - e.g environmental impacts of thermal power production, wastewater disposal



When to Regulate?

- Consumers routinely make choices and tradeoffs about service quality
- Quality only becomes a *potential* regulatory issue where, e.g :
  - A provider with monopoly power abuses this power by limiting quality choices or providing sub-standard services
  - Consumers lack the information with which to make informed decision about service quality
  - The production of services has significant external impacts (+ve or -ve) on the wider community

All Quality Choices Involve Trade-Offs

- Under traditional regulation, quality tends to be treated as an absolute
- In most cases, however, trade-offs are possible
- With privatization and formalization of economic regulation, these trade-offs become more concrete
- Need for careful coordination where different agencies are responsible for economic and environmental / safety regulation

Example: Rail Safety in the UK

- Spate of crashes in 2000 led to calls for greater safety measures – but concerns about cost effectiveness
  - Rail travel is already far safer than road travel (0.5 fatalities per billion passenger km, compared with 6 for road)
  - Cost-effectiveness of alternatives ranges widely

Rail vs Road Safety Measures (UK)

source Economist 25/11/00

Cost of one life saved by:	**$million**
Advanced train protection system	21.2
Train protection warning system	7.1
Implementing Transport Dept. guidelines on rail safety	4.5
Implementing Transport Dept. guidelines on road safety	1.6
Actual local authority spending on road safety	0.14

Quality of Service: Regulatory Instruments

Traditional Approaches

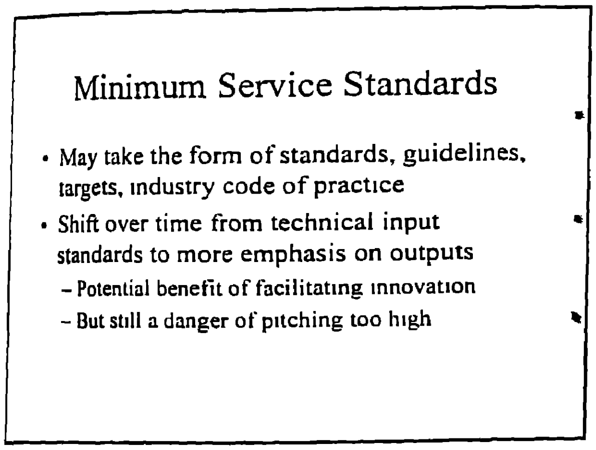
- Reliance on standards that are:
  - Universal
  - Uniform – and high
  - Focused on inputs
- Monitoring and enforcement that are:
  - For state-owned monopolies, lax – but for newly privatized entities intense

Emerging Trends

- Increasing consciousness of diversity of consumer needs / preferences
- Increasing focus on outputs/ outcomes as opposed to inputs
- Increased attention to incentives to maintain / improve service quality

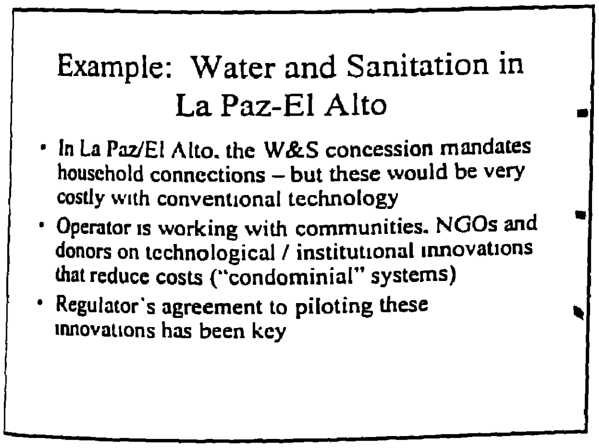
Alternative Approaches

- Minimum service standards
- Comparative performance monitoring
- Service fault penalties
- Customer compensation
- Adjustments to price / revenue caps
- Customer empowerment



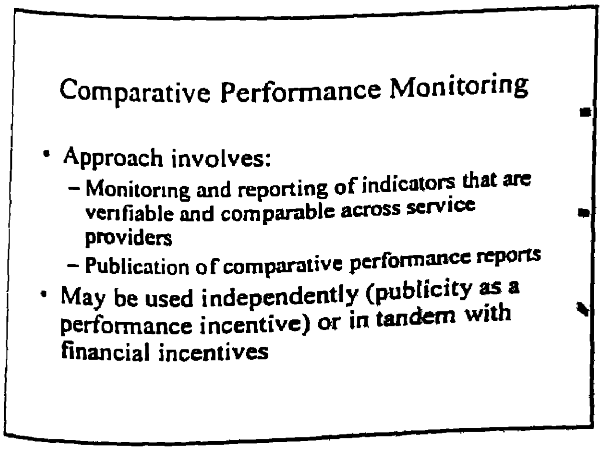
Minimum Service Standards

- May take the form of standards, guidelines, targets, industry code of practice
- Shift over time from technical input standards to more emphasis on outputs
  - Potential benefit of facilitating innovation
  - But still a danger of pitching too high



Example: Water and Sanitation in La Paz-El Alto

- In La Paz/El Alto, the W&S concession mandates household connections – but these would be very costly with conventional technology
- Operator is working with communities, NGOs and donors on technological / institutional innovations that reduce costs ("condominial" systems)
- Regulator's agreement to piloting these innovations has been key



Comparative Performance Monitoring

- Approach involves:
  - Monitoring and reporting of indicators that are verifiable and comparable across service providers
  - Publication of comparative performance reports
- May be used independently (publicity as a performance incentive) or in tandem with financial incentives

Benchmarking Water Utility Performance in the Philippines

- Public Performance Assessments (PPAs) in the water sector Combines provider-level and consumer-level indicators for:
  - network quality
  - water quality
  - service response
  - coverage
- Piloted for the Manila concessions (100 barangays) – plan to extend to other utilities

Service Fault Penalties

- Approach involves:
  - Setting target standards (can change over time)
  - Setting penalties for under-achievement
- Prices for penalties can be set to approximate the cost of the fault to customers
- Note: no incentive to over-perform

Customer Compensation

- Approach involves:
  - Specifying quality of service standards
  - Mandating compensation payments to affected customers when standards are not met
- Suitable only for failures that can be identified and verified for specific customers

Sri Lanka Telecoms QoS Regulation

- Measures applied to the major fixed access operators include:
  - Compensation for delayed connection
  - Compensation for delayed fault repairs
- Rules not applied to new entrants – assumed to need to provide QoS to survive in the market

OFWAT: Guaranteed Standards Scheme

- GSS specifies customer rights, entitlements to compensation for, e.g.:
  - Making and keeping service appointments
  - Responding to account queries
  - Responding to complaints
  - Interruptions to the water supply
  - Flooding from sewers
  - Low pressure

Adjustments to Price / Revenue Caps

- Approach involves incorporating a quality factor into a price cap – e.g. CPI-X+Q
- Allows service providers to make some price/quality trade-offs
- Requires an ability to:
  - Identify and weight key quality indicators
  - Judge appropriate relationship between P and Q
  - Independently monitor quality performance
- May be combined with requirements for full compliance on some quality indicators (e.g. those essential to health and safety)

Financial Incentives in Victoria (Aust.)

- 2001-04 electricity determination introduced 2 financial incentives for service reliability:
  - Addition of an "S" term to CPI-X controls to reflect actual service performance outcomes relative to targets
  - "Guaranteed Service Level" payments to customers suffering reliability below specified performance thresholds

OFGEM: Proposed Incentive Scheme

- QoS incentive scheme for electricity distribution planned for April 2002
- Proposed exposure of up to 2% of regulated revenue per year for performance in terms of:
  - Company-specific targets for number and duration of interruptions
  - Quality of telephone response provided to customers

Customer Empowerment

- Approaches aimed at boosting the position of customers when dealing with large utilities
  - Especially relevant for the quality of processes e.g. in customer relations
  - Incentive effects may be modest
- Options include:
  - Bills of rights for customers
  - Customer contracts
  - Ombudsmen
  - Customer councils / advisory boards

Customer Contracts in Victoria (Aust.)

- Benchmark "Customer Contract" and "Customer Charter" for Melbourne metro water retailers:
  - Each customer of a retail water company is deemed to have entered a contract with the company
  - Retail companies required to develop procedures to consult with customers on contract content, incl. service standards

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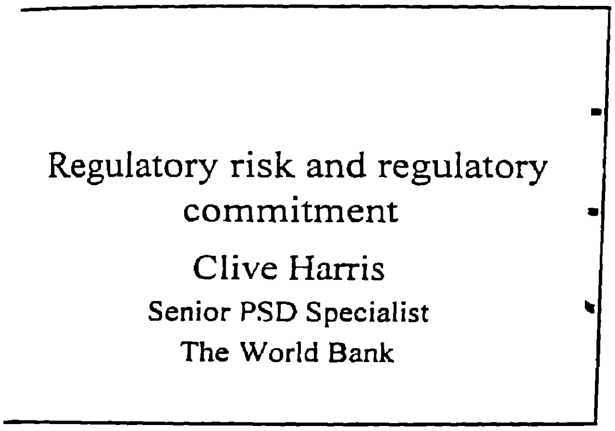
Introducing a QoS Scheme

- When building a QoS scheme from scratch, a gradual approach may be appropriate:
  - Begin by identifying benchmarks
  - For a period, measure performance against benchmarks & finetune these benchmarks
  - Then move towards financial incentives / penalties...

Concluding Comments

- Particularly where there is a concern to expand access, need to consider:
  - Regulation focussed on areas it can improve
  - Desired outcomes set with the affordability constraints in mind
  - Possibility of quality differentiation by utilities
  - Co-existence of alternative suppliers at different quality levels

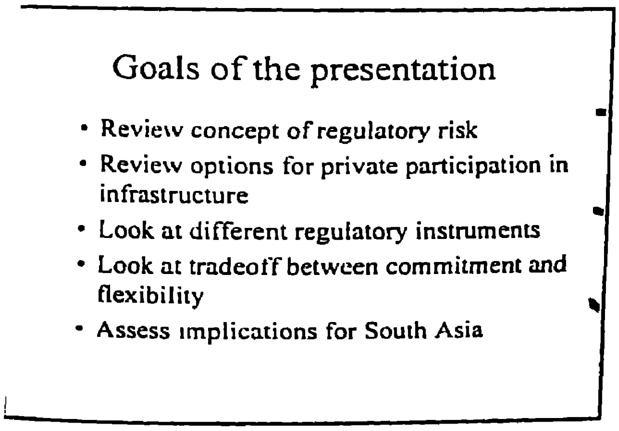


Regulatory risk and regulatory commitment

Clive Harris

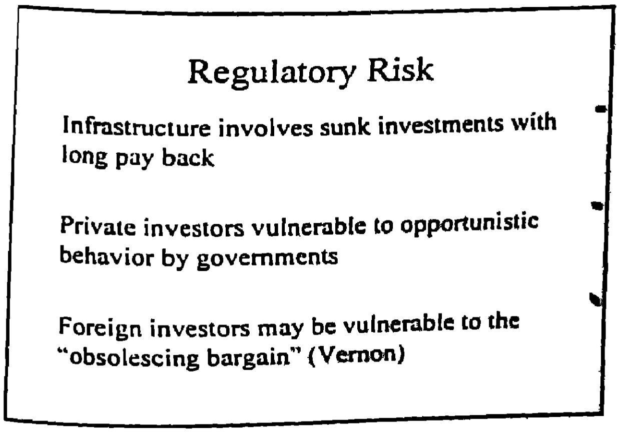
Senior PSD Specialist

The World Bank



Goals of the presentation

- Review concept of regulatory risk
- Review options for private participation in infrastructure
- Look at different regulatory instruments
- Look at tradeoff between commitment and flexibility
- Assess implications for South Asia



Regulatory Risk

Infrastructure involves sunk investments with long pay back

Private investors vulnerable to opportunistic behavior by governments

Foreign investors may be vulnerable to the "obsolescing bargain" (Vernon)

The Obsolescing Bargain

- Foreign investment welcomed when it brings in new technology, funds
- But once investment made, and can't be removed, perspective of host country government changes, perspectives of "bargain" change
- Subsequent steps are gradual or more rapid expropriation

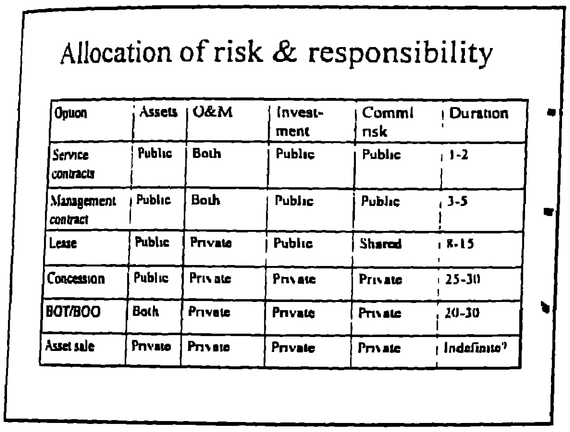
Understanding regulatory risk

- Exposure of private sector – what functions are they performing? Critical is investment
- Extent to which critical variables pre-specified in "binding" regulatory commitments
- Review of regulator's decisions

Private participation options

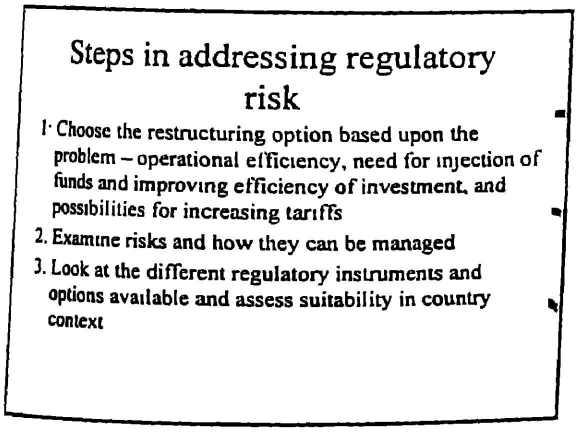
- Service contracts
- Management contracts
- Leases
- Concessions
- Build Operate and Transfer Contracts (and similar)
- Asset sale

Different responsibilities and risks borne by private sector



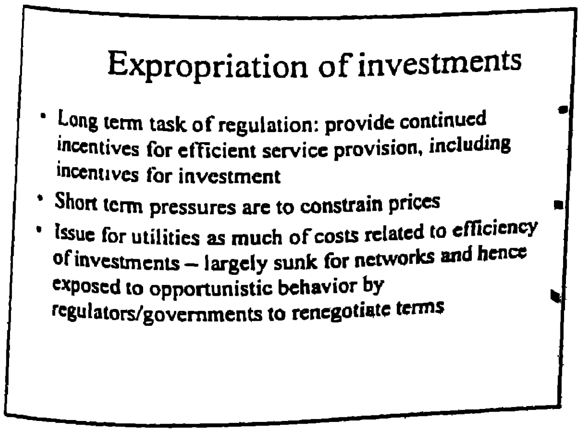
Allocation of risk & responsibility

Option	Assets	O&M	Invest-ment	Comml risk	Duration
Service contracts	Public	Both	Public	Public	1-2
Management contract	Public	Both	Public	Public	3-5
Lease	Public	Private	Public	Shared	8-15
Concession	Public	Private	Private	Private	25-30
BOT/BOO	Both	Private	Private	Private	20-30
Asset sale	Private	Private	Private	Private	Indefinite?



Steps in addressing regulatory risk

1. Choose the restructuring option based upon the problem – operational efficiency, need for injection of funds and improving efficiency of investment, and possibilities for increasing tariffs
2. Examine risks and how they can be managed
3. Look at the different regulatory instruments and options available and assess suitability in country context



Expropriation of investments

- Long term task of regulation: provide continued incentives for efficient service provision, including incentives for investment
- Short term pressures are to constrain prices
- Issue for utilities as much of costs related to efficiency of investments – largely sunk for networks and hence exposed to opportunistic behavior by regulators/governments to renegotiate terms

Regulatory instruments

- Wide range of instruments to establish regulatory body and implement regulation
- Instruments include:
  - laws
  - decrees (Presidential/ Ministerial/ Regulatory etc)
  - contracts and licenses

Licenses and Contracts

- Key interface for implementation is often a license or contract
- What are the differences between the two? Consider:
  - asset ownership
  - arbitration
  - flexibility

Asset Ownership

- Licenses have traditionally been used when a complete asset sale has been undertaken, or new entrance occurs
- Contracts, such as leases and concessions, keep the ultimate ownership of the assets with the State, although ownership during the contract period may be passed to the operator
- BUT is there a real difference?
  - Licenses may have end-dates
  - investment within a contract period is normally rewarded

Arbitration and revisions

- Licenses are often subject to unilateral change by the regulator (or licensor), although provisions for dispute resolution often exist. NB licenses granted under some Indian reform legislation reduce possibilities of unilateral revision
- Contracts are normally governed by commercial law and the usage of the courts, although it is possible to introduce alternative dispute resolution systems
- Special" Contracts: Special rules on adjustment.
  - Eg, government can unilaterally adjust in some circumstances, provided investor is compensated (rules for this are specified in contract).

Flexibility

- Concession contracts are perceived to be 'complete'
- Licenses often involve greater flexibility and discretion - hence the need for a regulator
- However, most contracts are 'incomplete', so leading to a need for some form of body for dispute resolution – whether separate regulatory agency or not

Implications

- Although there are differences between licenses and contracts, those differences are not as great as perceived
- Both can be defined in the implementation law
- Incomplete contracts have the same implications for regulation as do licenses

Where Credibility is an issue

- In jurisdictions where investors do not believe the government (or that 'independent' regulation is possible), credibility can be signaled through establishment of stable systems
- Tie the hands of future governments and regulators as much as is possible to provide investors as much protection as possible => including use of international arbitration
- But can have cost – reduced flexibility

Pros and Cons of Discretion

- Certainty vs. Flexibility
  - Very detailed and specific rules that cannot be changed unilaterally
    - + Certainty will lower cost of capital
    - Difficult to adapt to changing circumstances
    - Difficult to provide incentives for efficiency
  - More flexible approaches
    - + Easier to adapt to changing circumstances
    - + Easier to provide incentives for efficiency
    - Uncertainty and potential for misuse can increase cost of capital
      - Especially in countries with limited track-records

Are Regulators required?

'Regulation By Contract' at Retail Level?

- Administering
  - Highly-specified rules can minimize discretion
    - But pressures to adapt shift to renegotiation process
    - And impossible to eliminate all discretion
- Monitoring
  - Individual users lack capacity and incentives to detect non-compliance.
- Enforcement
  - Courts are slow and expensive
  - Individual users lack resources and incentives to pursue enforcement options.

Evidence on concession renegotiation

Source: ongoing work by Bank (L Guasch)

Main results.

- Renegotiation of concessions is very common: over 50% of concessions renegotiated within study period (10 years)
- Renegotiation happens soon after award: average time is 2.2 years
- More likely when concessions awarded on basis of lowest bid tariff

Evidence on concession renegotiation contd.

Main results continued:

- Less likely when there is a regulatory agency overseeing concession (28% of these are renegotiated) – due to increased transparency?
- Less likely when cost of service/ror approaches adopted under concession – because commercial risk is transferred to consumer unlike price caps

BUT: many renegotiations are beneficial

Country examples

- UK
- Peru
- Argentina

UK

- Enabling culture
- Simple laws that establish institutions and outline licenses
- Main instrument for implementation is the license - sets out price rules etc
- Regulator updates elements of the license periodically
- Dispute resolution through the courts and the Competition Commission

UK

Substantial scope for exercise of regulatory discretion because of little specification of details, no real precedent from appeals.

- **1994/95 Electricity Distribution Price Review revised in 1995 after takeover activity**
- **1997 windfall tax extracted around 5 bn sterling**

In recent review of regulation, Govt. recognized problem and is trying to develop framework with less regulatory discretion

Peru electricity sector

- Detailed regulation in the law – including formulas for price determination, details on the cost of capital
- Need to make changes lead to 4 changes to the law within 5 years

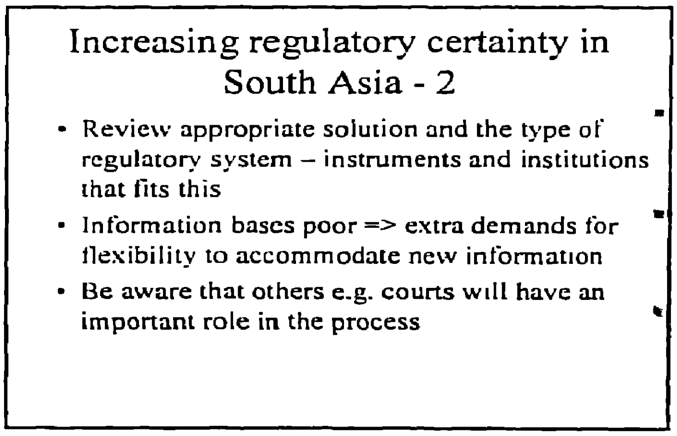
Argentina energy sector

- General principles contained in the law (e.g. "*just and reasonable return on investment*")
- Detailed regulation in the concession document itself – these are main form of implementation

Structure chosen because little investor confidence in the system at privatization

Increasing regulatory certainty in South Asia - I

- Present practices e g. in power sector a long way short of what is expected => move to these minimum levels
- Details of design of price controls are important – have to get risk sharing and rewards right as it is difficult to remain committed to unsustainable outcome
- Increase stability in system by appointing regulators who can stay in position 4-5 years



Increasing regulatory certainty in South Asia - 2

- Review appropriate solution and the type of regulatory system – instruments and institutions that fits this
- Information bases poor => extra demands for flexibility to accommodate new information
- Be aware that others e.g. courts will have an important role in the process

Regulating in an imperfect world: Efficacy, independence & legitimacy

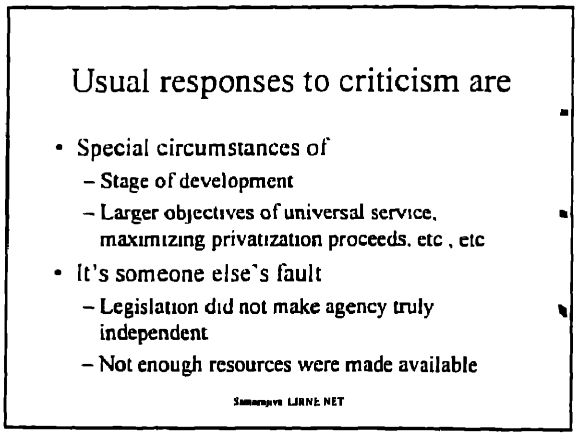
Rohan Samarajiva
LIRNE.NET
Delft University of Technology

Expectations . . .

- Regulatory agencies should be
  - Independent of operator
  - Independent of government
  - Based on expertise
  - Transparent, and
  - Effective

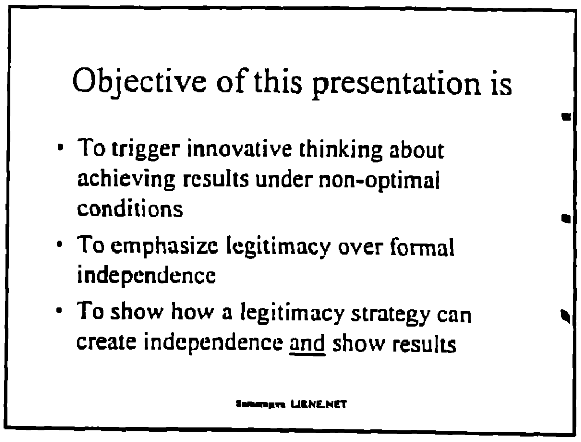
In practice. . .

- Regulatory agencies tend to be
  - Not always fully independent of operator, e g.
    - Government owns all/part of operator
    - Employees seconded from operator
  - Not independent of government
  - Lacking in human resources
  - Opaque, and
  - Semi-dormant (inaction as best defense)



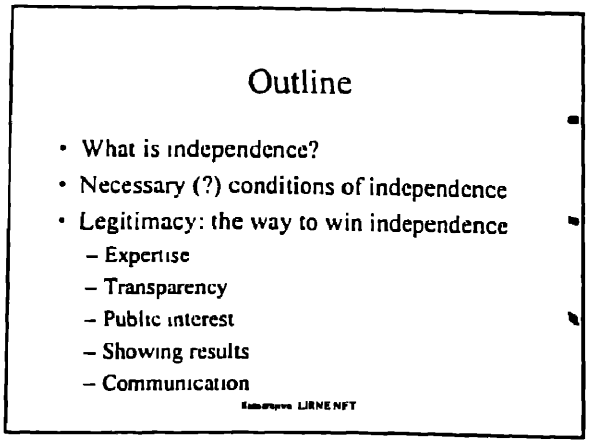
Usual responses to criticism are

- Special circumstances of
  - Stage of development
  - Larger objectives of universal service, maximizing privatization proceeds, etc., etc
- It's someone else's fault
  - Legislation did not make agency truly independent
  - Not enough resources were made available



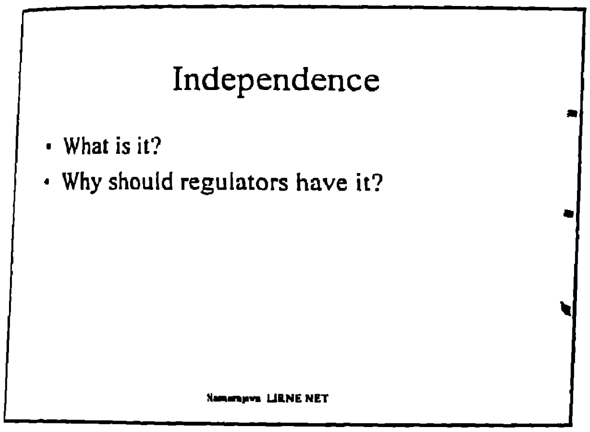
Objective of this presentation is

- To trigger innovative thinking about achieving results under non-optimal conditions
- To emphasize legitimacy over formal independence
- To show how a legitimacy strategy can create independence and show results



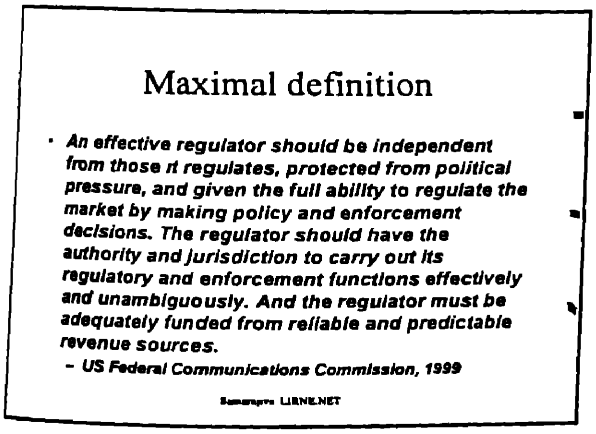
Outline

- What is independence?
- Necessary (?) conditions of independence
- Legitimacy: the way to win independence
  - Expertise
  - Transparency
  - Public interest
  - Showing results
  - Communication



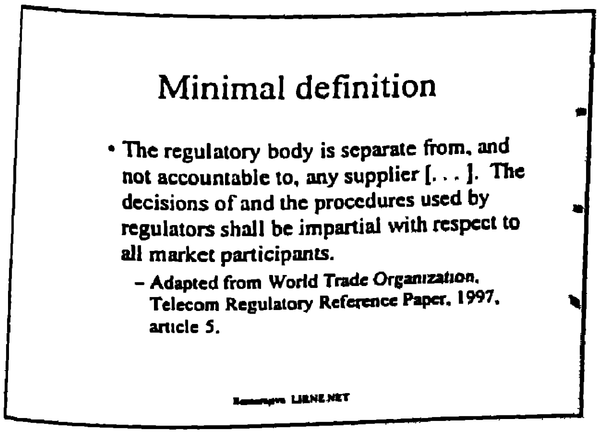
Independence

- What is it?
- Why should regulators have it?



Maximal definition

- ***An effective regulator should be independent from those it regulates, protected from political pressure, and given the full ability to regulate the market by making policy and enforcement decisions. The regulator should have the authority and jurisdiction to carry out its regulatory and enforcement functions effectively and unambiguously. And the regulator must be adequately funded from reliable and predictable revenue sources.***
  - ***US Federal Communications Commission, 1999***



Minimal definition

- The regulatory body is separate from, and not accountable to, any supplier [. . .]. The decisions of and the procedures used by regulators shall be impartial with respect to all market participants.
  - Adapted from World Trade Organization, Telecom Regulatory Reference Paper, 1997, article 5.

Regulator-government relations

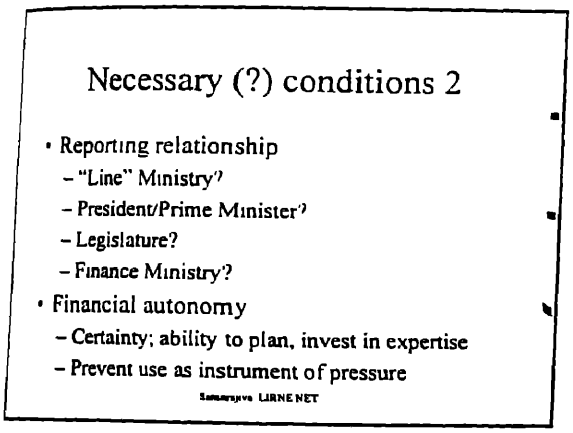
- Insulation from day-to-day interference by politicians is basic element of good public administration practice
  - Political accountability for policy setting
  - Admin/legal accountability for implementation
- Additional insulation for some agencies
  - E.g , Attorney-general; Anti-corruption bodies
  - Do regulators fall within this category?

Independence for regulators?

- Not in all cases
  - Example of Nordic countries
- Yes, when overall governance is poor
- Basic (not sole) rationale of regulation in developing countries (=countries with poor governance) is protection of investors from arbitrary takings
- Analogy. dike to protect lowland from ocean

Necessary (?) conditions

- Appointment procedures
  - Collaboration of branches of government
  - Screening committees
    - If too complex, can be counter-productive
  - Qualifications
- Removal procedures
  - Hard to remove, easy to appoint
  - Accountability through transparency



Necessary (?) conditions 2

- Reporting relationship
  - "Line" Ministry?
  - President/Prime Minister?
  - Legislature?
  - Finance Ministry?
- Financial autonomy
  - Certainty; ability to plan, invest in expertise
  - Prevent use as instrument of pressure

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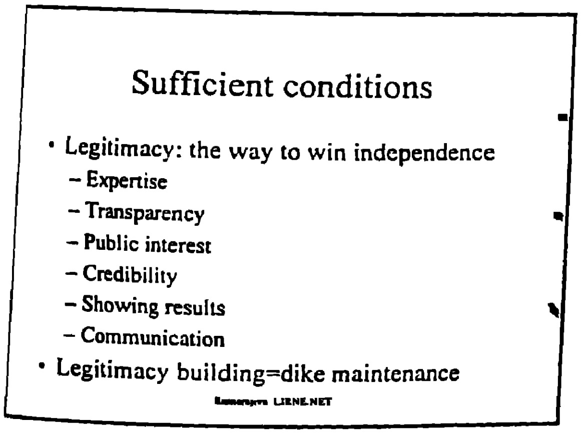

Sufficient conditions

- Legitimacy: the way to win independence
  - Expertise
  - Transparency
  - Public interest
  - Credibility
  - Showing results
  - Communication
- Legitimacy building=dike maintenance

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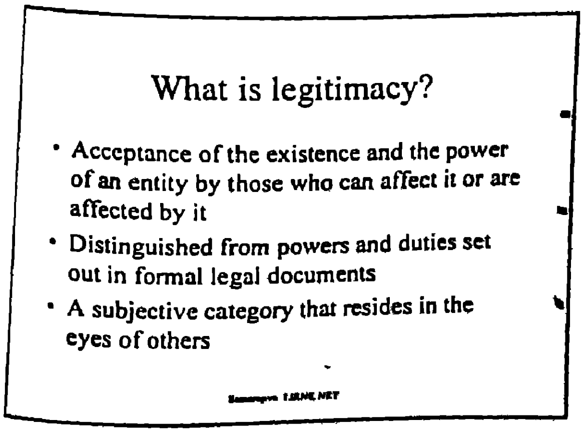

What is legitimacy?

- Acceptance of the existence and the power of an entity by those who can affect it or are affected by it
- Distinguished from powers and duties set out in formal legal documents
- A subjective category that resides in the eyes of others

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Legitimacy in whose eyes?

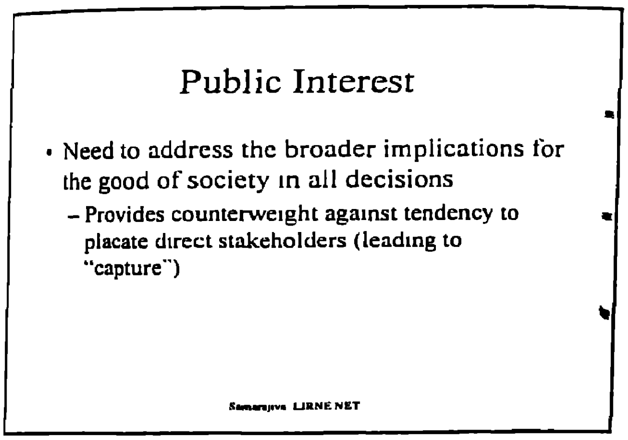
- Government
  - "Line" Ministry
  - President's/PM's office
  - Finance/Industry
  - Legislature/Judiciary
- Private
  - Incumbent/new entrants
  - Public/"opinion leaders"

Expertise

- Important, but inadequate by itself
  - Because application of expertise under conditions of imperfect knowledge always involves judgement
  - No justification for sector regulation without expertise

Transparency

- Essential ingredient of legitimacy
  - Reinforces expertise-based claims
  - Generates new information; improves information quality
  - Creates conditions for "buy-in" by stakeholders, reducing appeals
  - "Appeal-proofs" regulatory decisions, increasing likelihood of winning if appealed



Public Interest

- Need to address the broader implications for the good of society in all decisions
  - Provides counterweight against tendency to placate direct stakeholders (leading to "capture")

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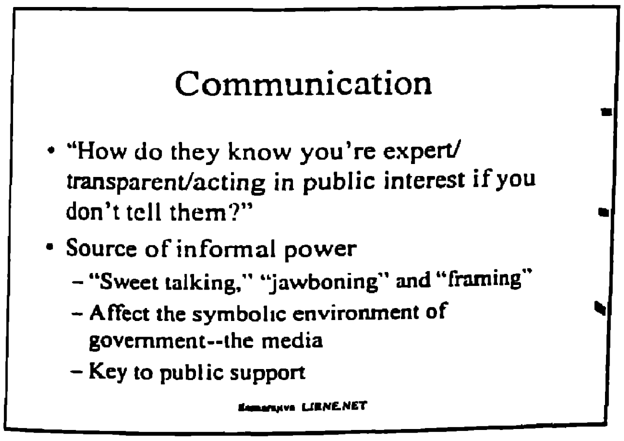

Communication

- "How do they know you're expert/ transparent/acting in public interest if you don't tell them?"
- Source of informal power
  - "Sweet talking," "jawboning" and "framing"
  - Affect the symbolic environment of government--the media
  - Key to public support

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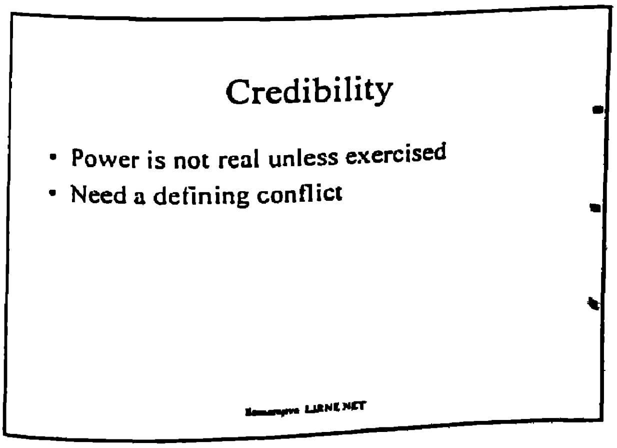

Credibility

- Power is not real unless exercised
- Need a defining conflict

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Achieve results

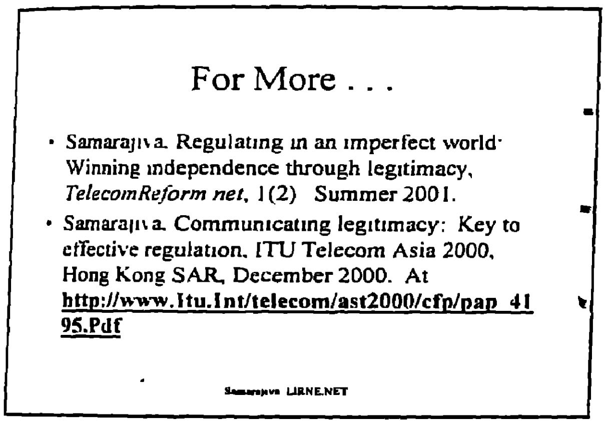
- Apply limited resources to winnable and easily explainable problems
- Win your battles
- Tell the world about them

Good governance is what it's all about

- ***Without good governance – without the rule of law, predictable administration, legitimate power and responsive regulation – no amount of funding, no short-term economic miracle will set the developing world on the path to prosperity. Without good governance, the foundations of society – both national and international – are built on sand.*** **(Original in French)**
  - Kofi Annan, 1997

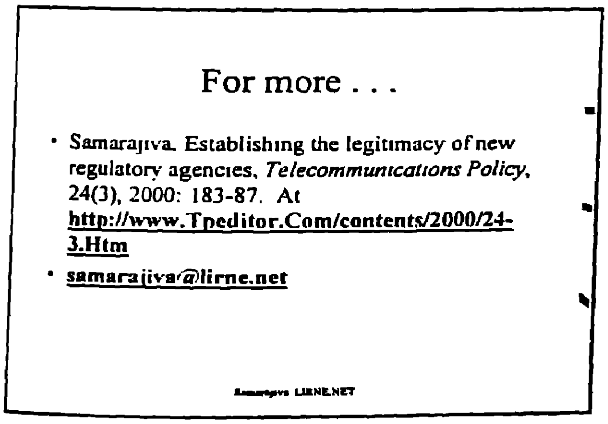
You can make a difference

- Dikes fail unless maintained; the ocean of bad governance will reclaim the land
- We have dike-building manuals, but not enough committed, innovative and pragmatic dike "maintainers"
  - Some lowland inhabitants are ambiguous amphibians
- All the training in the world is futile without commitment and creativity



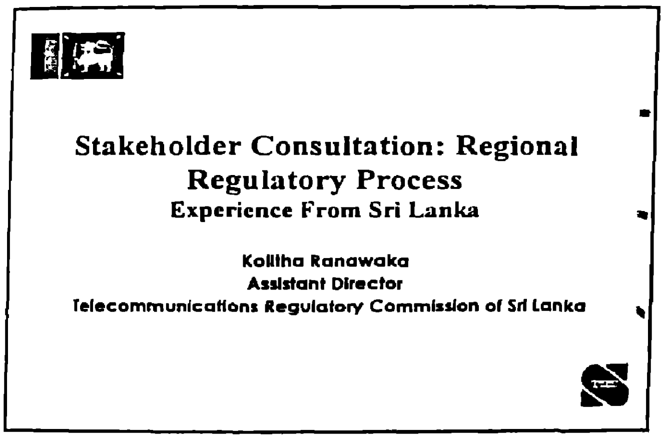
For More . . .

- Samarajiva. Regulating in an imperfect world: Winning independence through legitimacy, *TelecomReform net*, 1(2) Summer 2001.
- Samarajiva. Communicating legitimacy: Key to effective regulation, ITU Telecom Asia 2000, Hong Kong SAR, December 2000. At **http://www.Itu.Int/telecom/ast2000/cfp/pap 4195.Pdf**



For more . . .

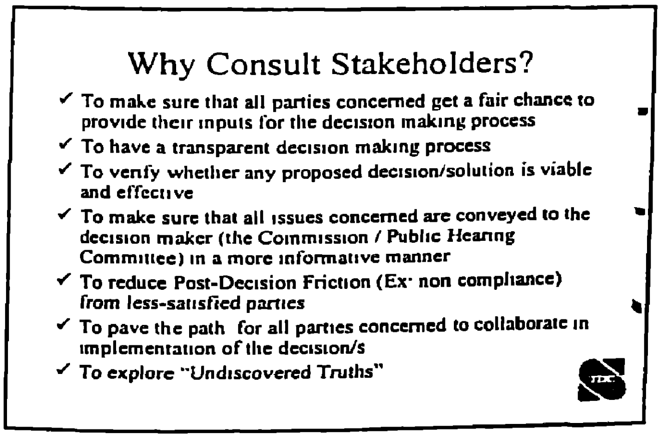
- Samarajiva. Establishing the legitimacy of new regulatory agencies, *Telecommunications Policy*, 24(3), 2000: 183-87. At **http://www.Tpeditor.Com/contents/2000/24-3.Htm**
- **samarajiva@lirne.net**



Stakeholder Consultation: Regional Regulatory Process

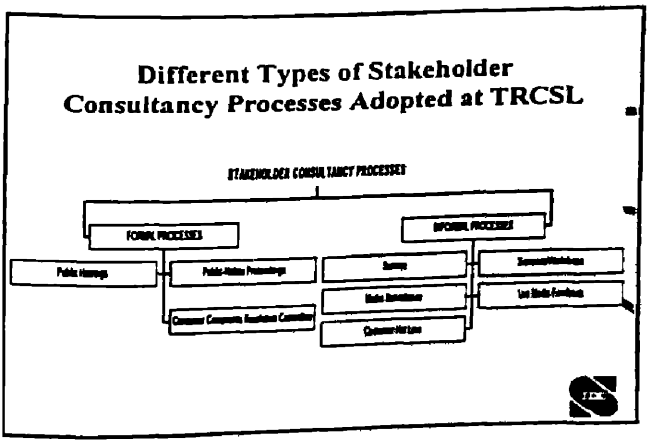
Experience From Sri Lanka

Kolitha Ranawaka
Assistant Director
Telecommunications Regulatory Commission of Sri Lanka



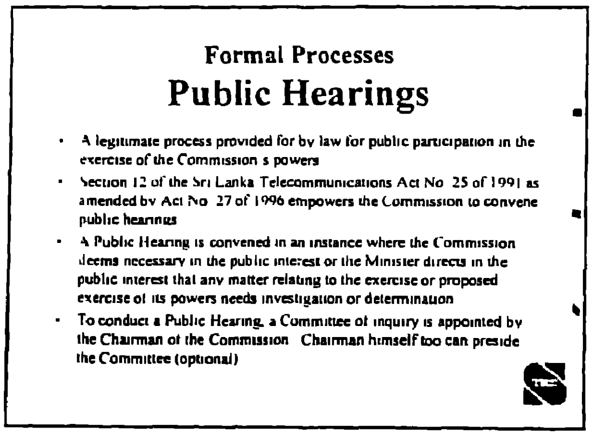
Why Consult Stakeholders?

- ✓ To make sure that all parties concerned get a fair chance to provide their inputs for the decision making process
- ✓ To have a transparent decision making process
- ✓ To verify whether any proposed decision/solution is viable and effective
- ✓ To make sure that all issues concerned are conveyed to the decision maker (the Commission / Public Hearing Committee) in a more informative manner
- ✓ To reduce Post-Decision Friction (Ex: non compliance) from less-satisfied parties
- ✓ To pave the path for all parties concerned to collaborate in implementation of the decision/s
- ✓ To explore "Undiscovered Truths"



Different Types of Stakeholder Consultancy Processes Adopted at TRCSL

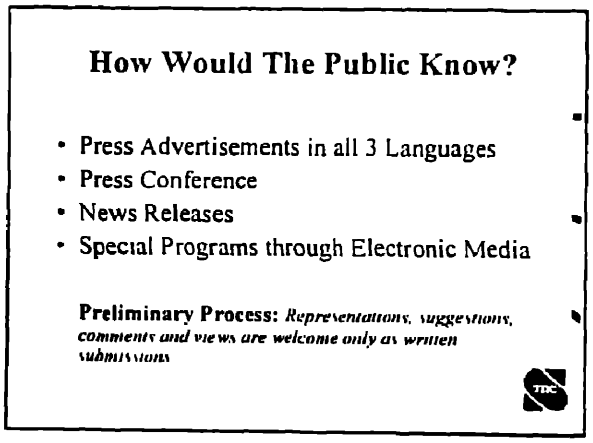
STAKEHOLDER CONSULTANCY PROCESSES
FORMAL PROCESSES
INFORMAL PROCESSES
Public Hearings
Public-Notice Proceedings
Consumer Complaints Resolution Committee
Surveys
Media Surveillance
Customer Hot Line
Seminars/Workshops
Via Media Feedback



Formal Processes

Public Hearings

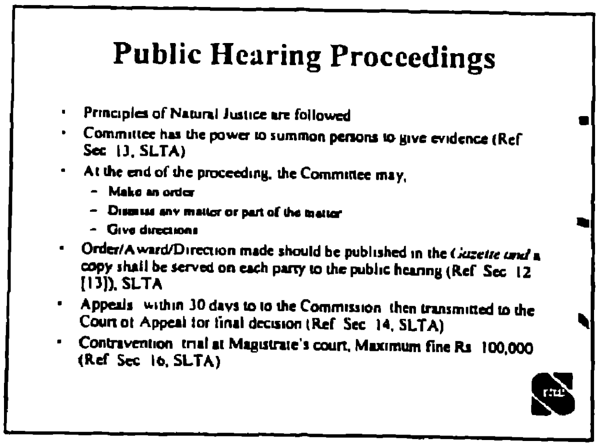
- A legitimate process provided for by law for public participation in the exercise of the Commission s powers
- Section 12 of the Sri Lanka Telecommunications Act No 25 of 1991 as amended by Act No 27 of 1996 empowers the Commission to convene public hearings
- A Public Hearing is convened in an instance where the Commission deems necessary in the public interest or the Minister directs in the public interest that any matter relating to the exercise or proposed exercise of its powers needs investigation or determination
- To conduct a Public Hearing, a Committee of inquiry is appointed by the Chairman of the Commission Chairman himself too can preside the Committee (optional)



How Would The Public Know?

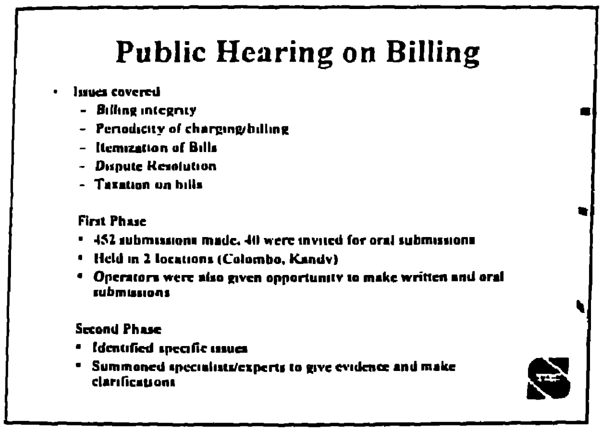
- Press Advertisements in all 3 Languages
- Press Conference
- News Releases
- Special Programs through Electronic Media

Preliminary Process: ***Representations, suggestions, comments and views are welcome only as written submissions***



Public Hearing Proceedings

- Principles of Natural Justice are followed
- Committee has the power to summon persons to give evidence (Ref Sec 13, SLTA)
- At the end of the proceeding, the Committee may,
  - Make an order
  - Dismiss any matter or part of the matter
  - Give directions
- Order/Award/Direction made should be published in the *Gazette and* a copy shall be served on each party to the public hearing (Ref Sec 12 [13]), SLTA
- Appeals within 30 days to to the Commission then transmitted to the Court of Appeal for final decision (Ref Sec 14, SLTA)
- Contravention trial at Magistrate's court, Maximum fine Rs 100,000 (Ref Sec 16, SLTA)



Public Hearing on Billing

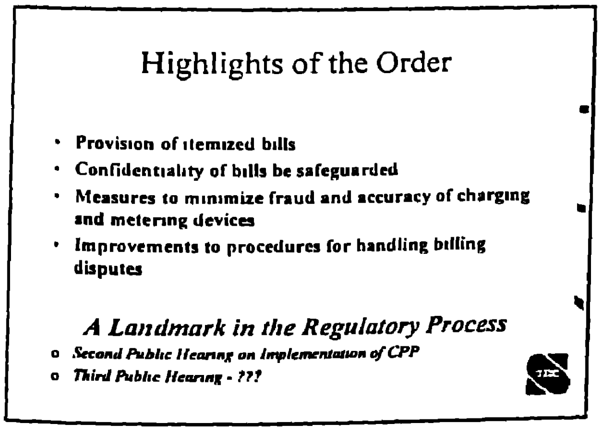
- Issues covered
  - Billing integrity
  - Periodicity of charging/billing
  - Itemization of Bills
  - Dispute Resolution
  - Taxation on bills

First Phase

- 452 submissions made. 40 were invited for oral submissions
- Held in 2 locations (Colombo, Kandy)
- Operators were also given opportunity to make written and oral submissions

Second Phase

- Identified specific issues
- Summoned specialists/experts to give evidence and make clarifications

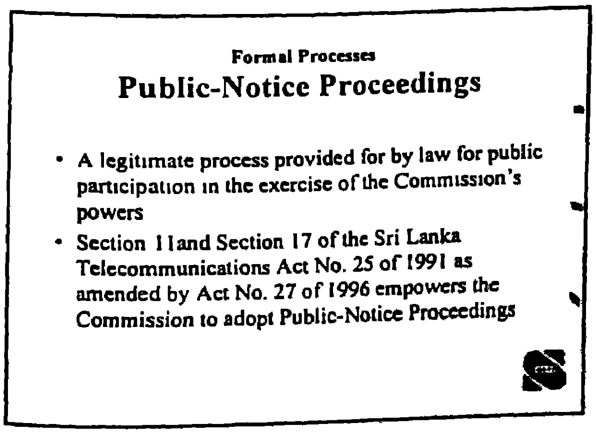


Highlights of the Order

- Provision of itemized bills
- Confidentiality of bills be safeguarded
- Measures to minimize fraud and accuracy of charging and metering devices
- Improvements to procedures for handling billing disputes

A Landmark in the Regulatory Process

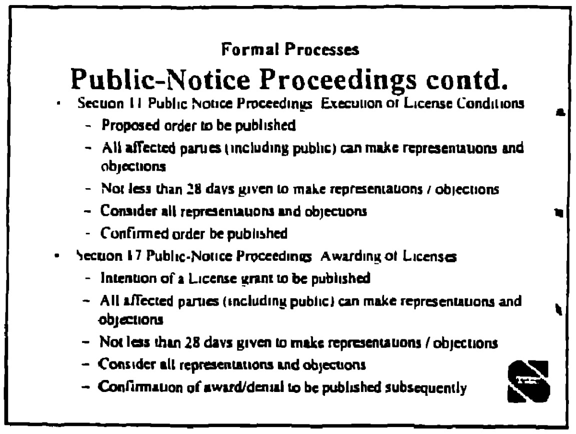
- o *Second Public Hearing on Implementation of CPP*
- o *Third Public Hearing - ???*



Formal Processes

Public-Notice Proceedings

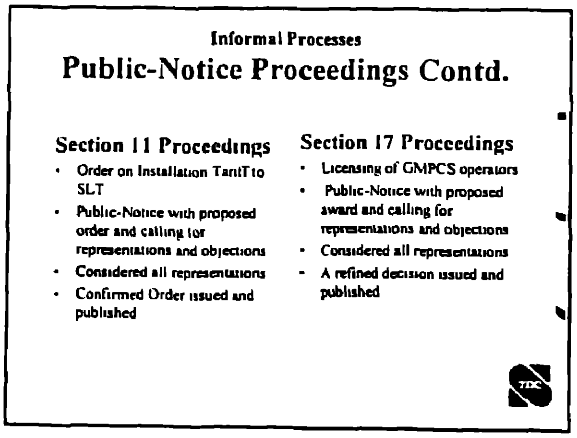
- A legitimate process provided for by law for public participation in the exercise of the Commission's powers
- Section 11and Section 17 of the Sri Lanka Telecommunications Act No. 25 of 1991 as amended by Act No. 27 of 1996 empowers the Commission to adopt Public-Notice Proceedings



Formal Processes

Public-Notice Proceedings contd.

- Section 11 Public Notice Proceedings Execution of License Conditions
  - Proposed order to be published
  - All affected parties (including public) can make representations and objections
  - Not less than 28 days given to make representations / objections
  - Consider all representations and objections
  - Confirmed order be published
- Section 17 Public-Notice Proceedings Awarding of Licenses
  - Intention of a License grant to be published
  - All affected parties (including public) can make representations and objections
  - Not less than 28 days given to make representations / objections
  - Consider all representations and objections
  - Confirmation of award/denial to be published subsequently



Informal Processes

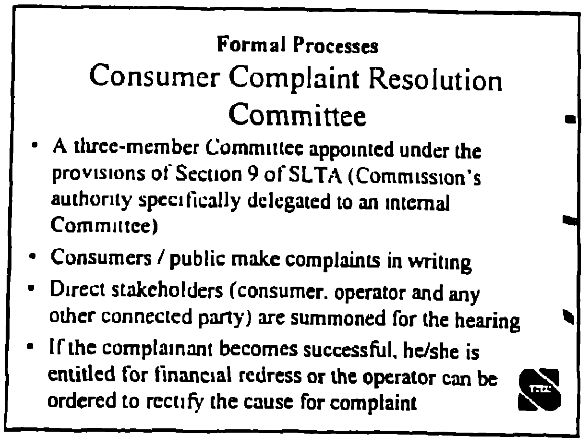
Public-Notice Proceedings Contd.

Section 11 Proceedings

- Order on Installation Tariff to SLT
- Public-Notice with proposed order and calling for representations and objections
- Considered all representations
- Confirmed Order issued and published

Section 17 Proceedings

- Licensing of GMPCS operators
- Public-Notice with proposed award and calling for representations and objections
- Considered all representations
- A refined decision issued and published



Formal Processes

Consumer Complaint Resolution Committee

- A three-member Committee appointed under the provisions of Section 9 of SLTA (Commission's authority specifically delegated to an internal Committee)
- Consumers / public make complaints in writing
- Direct stakeholders (consumer, operator and any other connected party) are summoned for the hearing
- If the complainant becomes successful, he/she is entitled for financial redress or the operator can be ordered to rectify the cause for complaint

Informal Processes

Surveys

Consumer Surveys Conducted by TRC

- Telecommunications Needs For the Rural areas of Sri Lankans

  Objectives Assess usage, unmet needs, prevailing barriers, acceptance of the concept of telecenters
- Study on Quality of Service (QOS) of Fixed Access Operators
- Study of Acceptance of QOS Standards by subscribers

  Objectives. Develop QOS standards

  Measure current QOS

  Ascertain acceptability of current QOS standards

Outcomes of the Rural Telecom Survey

- Telecommunications is the 2nd in the hierarchy of needs in rural areas
- Highest used modes of communications, Postal (37%), telegrams (46%)
- Lowest used mode of communications, Internet and E-mail (0 6%)
- Only 2% of rural subscribers' income is spent on communications
- Reason for low usage is non availability of communications facilities

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Informal Processes

Seminars & Workshops

- ☐ Seminars and workshops held around the country to identify needs, problems, shortcomings etc. in telecommunications services
- ☐ Participation· Public, Govt. Officials, Business Community, Representatives from Operators
- ☐ Feedback obtained was incorporated in the process of making Commission decisions

Informal Processes

Media Surveillance, Live Media Feedback and Consumer Hotline

- ☐ Scrutiny of material appearing in the print and electronic media relevant to the telecommunications sector
- ☐ Commission's officials participating in Live radio/TV chat programmes and obtaining feedback/inputs form public
- ☐ Feedback/Input from members of the public calling the Commission to obtain help/information/redress Toll Free "662222"

Further information
Director-General
Telecommunications Regulatory Commission of Sri Lanka
276, Elvitigala Mawatha, Colombo 08, Sri Lanka

+ 94 1 689345 (Voice)
+ 94 1 689341 (Fax)
E-mail. dgtsl@slt.lk

THANK YOU!!!

R K Pachauri
Director-General
TERI
Habitat Place, Lodi Road, New Delhi - 110 003
Fax 91-11-4682144, 4682145
Tel 91-11-4682100, 4682111
E-mail: pachauri@teri.res.in
Web www.teriin.org

Dr Rajendra K Pachauri was born in Nainital. India, on 20 August 1940. He assumed his current responsibilities as the head of TERI (Tata Energy Research Institute) in 1981, first as Director and, since April 2001, as Director-General. TERI does original work and provides professional support in the areas of energy, environment, forestry, biotechnology, and the conservation of natural resources to government departments, institutions, and corporate organizations worldwide. Dr Pachauri has been elected as Chairman of IPCC (Intergovernmental Panel on Climate Change), established by World Meteorological Organization and United Nations Environment Programme in 1988. He has taken charge as Chairman, IPCC from 20th April 2002 onwards. He has been active in several international forums dealing with the subject of climate change and its policy dimensions.

To acknowledge his immense contribution to the field of environment, he has been awarded the **Padma Bhushan** – one of India's highest civilian awards that recognizes distinguished service of a high order to the nation in any field (January 2001).

Commencing his career with the Diesel Locomotive Works, Varanasi, where he held several managerial positions, Dr Pachauri joined the North Carolina State University, Raleigh, North Carolina, USA, where he obtained an MS in Industrial Engineering in 1972, a PhD in Industrial Engineering and a PhD in Economics, and also served as Assistant Professor (August 1974–May 1975) and Visiting Faculty Member (Summer 1976 and 1977) in the Department of Economics and Business.

On his return to India, he joined the Administrative Staff College of India, Hyderabad, as Member Senior Faculty (June 1975–June 1979) and went on to become Director, Consulting and Applied Research Division (July 1979–March 1981). He joined TERI as Director in April 1981.

He has also been a Visiting Professor, Resource Economics at the College of Mineral and Energy Resources, West Virginia University (August 1981–August 1982); Senior Visiting Fellow, Resource Systems Institute, East–West Center, USA (May–June 1982); and Visiting Research Fellow, The World Bank, Washington, DC (June–September 1990). Recognizing his vast knowledge and experience in the energy–environment field, the United Nations Development Programme appointed him as a part time Adviser in the fields of Energy and Sustainable Management of Natural Resources, 1994–1999.

His wide-ranging expertise has resulted in his being invited to join various international and national committees and boards, which on the international level include Member, Board of the International Solar Energy Society (ISES), 1991–1997; Member, World Resources Institute (WRI) Council, 1992; Chairman, Work Group A – World Energy Council (WEC) Committee on Developing Countries, 1993–1995; President (1988), Chairman (1989–90), International Association for Energy Economics (IAEE), Washington, D C .; President, Asian Energy Institute, 1992 onwards.

Committees of the Government of India which he has served include Member, Panel of Eminent Persons on Power, Ministry of Power; Member, Delhi Vision – Core Planning Group; Member, Advisory Board on Energy (ABE), Government of India, 1983 – 1988 (The Board reported directly to the Prime Minister of India); Member, National Environmental Council, Government of India under the Chairmanship of the Prime Minister of India, November 1993 and April 1999; Member, Oil Industry Restructuring Group, "R" Group, Ministry of Petroleum and Natural Gas, Government of India, 1994.

He has also served on academic and research institute bodies including Member, Board of Governors, Trireme Scientific & Industrial Research Foundation, September 1987; Member, Executive Committee of the India International Center, 1985 onwards; Member, Governing Council of the India Habitat Center, New Delhi, October 1987 onwards; Member, Court of Governors, Administrative Staff College of India, 1979–81.

In January 1999, Dr R K Pachauri was appointed as Director, Board of Directors of the Indian Oil Corporation Limited (a Fortune 500 company) for a period of 3 years.

In April 1999, Dr R K Pachauri was appointed as the Member, Board of Directors of the Institute for Global Environmental Strategies (IGES), Environment Agency, Government of Japan, for a period of 3 years.

In September 1999, Dr R K Pachauri was appointed as the Chairman, The Darjeeling Himalayan Railway Heritage Foundation, Darjeeling.

He taught at the School of Forestry & Environmental Studies, Yale University, USA, as McCluskey Fellow during 6 September–8 December 2000.

In July 2001, Dr R K Pachauri was appointed Member, Economic Advisory Council to the Prime Minister of India.

He has also authored 21 books and several papers and articles.

Amal S. Kumarage
Head
Transportation Engineering Division
Department of Civil Engineering,
University of Moratuwa, Moratuwa,
Sri Lanka
Tel 94 1 650567 or 94 74 213833
E mail kumarage@sltnet.lk

Amal Kumarage served as a Senior Lecturer in the Department of Civil Engineering at the University of Moratuwa and presently functions as the Head of its Transportation Engineering Division. During this period, the Transportation Engineering Division has maintained a highly professional profile in transport sector research and academic standards, and has emerged as an institution closely associated with the transport sector development in Sri Lanka. Dr. Kumarage has also been a mover of the pioneering efforts in the setting up the post-graduate courses in transport engineering and planning at the University of Moratuwa, the only one of its kind in Sri Lanka.

He has published several scientific papers both locally and abroad in areas of transport planning, traffic engineering, road safety and regional development. He has won awards from the Institution of Engineers, Sri Lanka and from CIT in Sri Lanka in recognition for his research work that has mainly focussed on transport problems in Sri Lanka. He is also known for his pioneering efforts in developing traffic signal systems in Sri Lanka and is a joint developer of the patented Uniroad Signal system widely used across the country. Following this success he is currently pursuing the development and use of Intelligent Transport Systems for Sri Lanka. His other pursuits at present include the setting up of a council for traffic management and the introduction of rapid transit to Colombo. Moreover, he, together with his team at the University of Moratuwa are also engaged in developing an indigenous transport planning model and database that is increasingly sought after in transport studies known as the TransPlan Model.

He has also been instrumental in several important policy and strategy studies in Sri Lanka in recent years. Among these are the Proposed National Transport Policy, the Bus Transport Policy, the Colombo Metropolitan Regional Structure Plan, the Transport Masterplan and the Traffic Management Action Plan. He is also closely associated with a number of State sector agencies serving in advisory, management and consultative capacities. He has also provided assistance to studies conducted by the UNDP, World Bank and numerous transport sector, urban development and poverty alleviation projects.

Amal Kumarage graduated from the University of Moratuwa in 1984 with a degree in Civil Engineering. He was encouraged to pursue transport engineering by Professor Lakshman Ratnayake and thereafter proceeded to Calgary, Canada for Doctoral Studies under the supervision of Professor Chandana Wirasinghe.

A M M Yahya
Director
External Coordination & Legal
GrameenPhone Ltd.
Dhaka, Bangladesh.
E-mail: yahya@grameenphone.com

Mr. A M M Yahya (53) obtained his B.Sc. in Electrical Engineering from Bangladesh University of Engineering & Technology, Dhaka in 1970. He joined Bangladesh Railways (BR) and served for about 27 years in different capacities including those as Chief Engineer/ Telecom and Additional General Manager. He was instrumental to the conceiving, and building of Bangladesh Railway's Optical Fiber Network which was a pioneering project in the South East Asia at that time in 1986.

After this project for railway was completed he worked for commercial utilization of the latent capacity of the optical fiber network of BR and eventually through international bidding succeeded in leasing this to the highest evaluated bidder, GrameenPhone Ltd. in 1997. Due to this, BR now enjoys all the telecommunication facilities, required for its operation, free of charge and earns revenue from the lease of the optical fiber and related facilities. On the other hand, GrameenPhone has made tremendous good use of the existing optical fiber of BR and turned out to be the leading service provider of cell phones in Bangladesh over the widest area of coverage. The subscriber base of GrameenPhone is 550,000 and the coverage extends over 42 district head quarters out of a total of 64 in the whole of Bangladesh only after 5 years of operation.

In addition to working as the Head of the Department of Signal & Telecommunications (S&T) for about 15 years, he was responsible for the construction of about 100 railway signal installations all over Bangladesh. He joined GrameenPhone Ltd. in January,2000 in the Department of Coordination & Legal as its Director. His present assignment is to take care of all legal matters of GP and do coordination with Government, Autonomous and Private Enterprizes. Dealing with regulatory affairs also fall in his jurisdiction. Recently, marketing of fiber capacity has been given to him. The extra capacity of the fiber which is expandable upto 30,000 channels is expected to fetch many millions to GP in the coming years. The responsibility of managing the fiber capacity in GP for sale and development has been given to Mr. Yahya.

Mr. Yahya has a commendable skill in contract negotiations, planning, maintenance and operational activities relating telecommunications and railway signal. He is a good orator and is an expert presenter. He has a keen acumen on legal issues. He has traveled extensively in India and Europe. He is married to Dr.Nagma and has three children.

Shrikant D. Kulkarni
Director, Energy Group
CRISIL
Tel. 91 22 6913001-09/ 3165
Fax. 91 22 6913000/ 3040
E-mail: skulkarni@crisil.com

Presently, Mr Kulkarni is associated with the Credit Rating Information Services of India Limited (CRISIL) as Director, Energy Group. He works primarily on the energy sector advisory assignments. His assignment management responsibilities include providing both the analytical and strategic inputs for a variety of assignments involving financial modeling, project contract formulation and negotiations, bid process management, business planning, business valuation, financial restructuring and privatization. Besides execution of assignments, Mr. Kulkarni is also responsible for business planning & development and capability development in the Energy sector.

He was also associated with Larsen & Toubro Limited (L&T), Tata Consultancy Services, and Mahindra & Mahindra Limited in different capacities.

Mr. Shrikant Kulkarni is a financial/economics specialist and an energy sector expert engaged in providing advisory services to central and state governments, independent regulatory commissions, multilateral/bilateral funding institutions and private sector clients in India. In his capacity as Director of the Energy Group of CRISIL Advisory Services (now "CRISIL Infrastructure Advisory"), he has been playing the role of assignment manager on a number of assignments involving power sector reforms/ restructuring & regulation, financial reorganization, analysis of utility and state finances, private sector participation in the power sector, Escrow studies, business valuation and privatization.

He has been actively involved in a number of regulatory and policy level assignments, which include providing assistance to Central Electricity Regulatory Commission in determination of optimal cost of capital for utilities, advising Uttar Pradesh Electricity Regulatory Commission in developing a regulatory framework and methodology for retail supply tariffs, assisting Haryana Electricity Regulatory Commission and Delhi Electricity Regulatory Commission in setting tariffs. Mr. Kulkarni has also published a working-paper on multi-year tariffs and has an excellent understanding of regulatory issues in the Indian power sector.

Born in 1964, Mr Kulkarni did his Bachelor of Engineering - Mechanical and Masters of Management Studies in Finance from University of Mumbai. He was also received training in Structuring and Financing of Independent Power Projects and Marginal Cost Pricing in a Competitive World at USA. He is member of International Association for Energy Economists (IAEE) and Infrastructure Task Force of the Confederation of Indian Industry (CII).

Abu Saeed Khan
Research Analyst
EMC
F-31, Road No - 4, Banani, Dhaka
Bangladesh
Tel 880-02-988-3333 / 880-017-564-600 (cell)
E-mail saeed@bol-online.com

Abu Saeed Khan is working as Research Analyst with EMC (www.emc-database.com), a Division of the Informa Group plc in London. His responsibility includes gathering market intelligence on the cellular markets of Bangladesh. His responsibilities also include evaluation of the prevailing regulatory environment and assess respective operator's technical growth and business development.

He is also the Field Director of PRISM (Private Sector Regulation Implementation and Support Mechanism), a CIDA-funded private sector capacity building project in Bangladesh.

Earlier Mr. Khan worked in the Legal Department of Occidental of Bangladesh Ltd. as Contracts Administrator, Consultant to obtain market intelligence for Motorola Inc, Liaison Office Manager for ALCATEL, and Executive Director of Business International Limited.

Mr. Abu Saeed Khan was born in 1962 in Bangladesh. He holds a Bachelor of Arts degree from Dhaka University. He has several publications in area of telecom and IT sectors in his credit. He attends international telecom events regularly.

Rattan Kumar Siddhi
Co-ordinator
Private Sector Participation High-Level Committee
DWSS Building,
Maharajgunj Paani Pokhari,
P.O. Box No. 182, Kathmandu
Nepal
Tel 977-1-429531
Fax 977-1-419802
Email npspc@wlink.com.np

Mr. Siddhi has been involved in the water supply and sanitation sector development activities for the past four decades. He is presently a member of the Team working on the formulation of the National Water Plan - following the approval of the Nepal Water Resources Strategy by the Government earlier this year. He is also the Co-ordinator of the High-Level Committee for Private Sector participation of His Majesty's Government of Nepal. The Committee has been active since July 1997 and is preparing for the introduction of a private operator under a management lease contract for the Kathmandu Valley Urban Water Utility. He has work experience in Nepal, Bangladesh, and Myanmar. Prior to his retirement in November 1992, he served as Chief, Water Supply and Sanitation Division, Ministry of Housing and Physical Planning. He also served in several government positions including Deputy Director General, Department of Water Supply and Sewerage, Chief Engineer, Water Supply and Sewerage Corporation, etc.

He is life member of Nepal Engineers' Association, Society of Public Health Engineers, Nepal, Institution of Engineers (India), Indian Water Works Association and Indian Association for Environmental Management.

Mr Siddhi holds a Bachelor of Engineering (Civil) degree from University of Roorkee, India and also holds a Diploma in Sanitary Engineering (Delft), The Netherlands (Equivalent to M.Sc.). He has also actively participated in various training programmes in India and Latin American countries.

O.P. Agarwal
Joint Secretary (Training)
Department of Personnel & Training
Govt. of India, New Delhi
E-mail: opagar@nic.in

Joined the Indian Administrative Service in 1979.

Currently Mr O P Agarwal is serving the government as Joint Secretary (Training) Department of Personnel & Training. He has hold various administrative posts in both State and Central Govt including Secretary to the Government of Assam, Department of Transport; Director (Urban Transport), Ministry of Urban Development, Government of India; Trade Adviser, Ministry of Finance, Republic of Seychelles; Deputy Secretary, Ministry of Commerce, Government of India, etc. He was also associated with TERI as Senior Fellow, Urban and Transport Systems Group.

He did Master of Science from Massachusetts Institute of Technology, Cambridge, MA, USA in Technology & Policy (Focus Area - Transport) and Transportation during 1996-1998. He also holds Bachelor of Technology degree from Indian Institute of Technology, Chennai, India in Electrical Engineering. He authored several papers in recent years.

Martin Plackett
Head of Regulation
BG GROUP

Martin Plackett has a mathematics degree from Trinity College, Cambridge, and a postgraduate qualification in operational research. After university, he spent nine years in the coal industry in various analytical and corporate planning jobs, including a period of external consultancy for the Department of Health. He then joined British Gas, initially as a corporate planner, including a period working on the privatisation of British Gas in 1986. Subsequently he spent a period as a gas buyer. After a six-month period in Washington DC in 1990 studying business-government relations in the USA, he joined the part of British Gas pursuing international diversification opportunities. From 1991 to 1996 he was responsible for business development in Eastern Europe. This period included extensive work with governments and state-owned companies on the design of privatisation processes and regulatory frameworks. Up until 1999, he was responsible within BG plc, one of the successor companies to British Gas, for BG's activities in Northern Ireland and the Republic of Ireland. This involved oversight of BG's three Northern Ireland companies (Phoenix Natural Gas, Premier Transco and Premier Power) and development of additional business opportunities. He is currently Head of Regulation for BG Group, advising businesses around the world on regulatory issues and regulatory process.

Sanjivi Sundar
Distinguished Fellow
TERI
Darbari Seth Block, Habitat Place, Lodhi Road
New Delhi – 110 003
Tel 91-11-468 2100 or 468 2111
Fax 91-11-468 2144 or 468 2145
E-mail ssundar@teri.res.in
Web www.teriin.org

Sanjivi Sundar M.A. (Madras) 1959, B.L. (Madras) 1961, is currently a Distinguished Fellow at the Tata Energy Research Institute and is also the Chairperson of its Advisory Board on Regulatory Issues and governance. He joined Indian Administrative Service and held several senior positions in the State of Gujarat and in the Government of India. He was Joint Secretary in the Department of Economic Affairs of the Government of India, Finance Secretary to the Government of Gujarat, and Permanent Secretary in the Ministry of Surface Transport, Government of India. He also spent eight years with the Commonwealth Secretariat in London, first as Special Advisor, International Finance and then as Director of the Economic and Legal Advisory Services Division which assists and advises developing Commonwealth governments in macro-economic and financial management, and international contractual arrangements. In that capacity, he has been responsible for advising several Commonwealth governments on debt restructuring, privatization and development of capital markets.

He has written extensively on regulatory issues for newspapers and refereed journals. He is on the Faculty of the South Asian Forum for Infrastructure Regulation (SAFIR), and is an Advisory on infrastructure law to JSA, a leading law firm in India.

Ardhendu Sen
Senior Fellow
TERI
Tel. 91-11-4682100, 4682111
Fax. 91-11-4682144, 4682145
E-mail: asen@teri.resi.in
Web www.teriin.org

Mr Ardhendu Sen is a member of the Indian Administrative Service since 1976. Currently he is associated with Tata Energy Research Institute as Senior Fellow.

Previously, he worked as Director (Natural Gas) and Secretary, Oil Industry Development Board, Ministry of Petroleum, Government of India from 1993 to 1998. The responsibilities included drawing up plans for the oil & gas sector for the 9th Five-Year Plan period from 1997 to 2002. Was a member of the Joint Working Group appointed by Iran and India to study the feasibility of importing gas from Iran. Worked as the Member Secretary of the Gas Linkage Committee; Director in the Gas Authority of India Ltd.; Member Secretary of the Natural Gas Pricing Committee, 1995.; Member of the Steering Committee for the study on a Regulatory Framework for the Indian Natural Gas Industry, carried out by NERA for the ADB. He also worked in various capacities with the Government of West Bengal.

From 1998 onwards, Mr Sen has worked in many projects involving projections of oil and gas demand including working on the Hydrocarbon Vision 2025 brought out recently by the Government of India. Mr Sen is now working as the Oil and Gas Specialist in the Energy-Environment Review for Iran.

Born in 1950, Mr Ardhendu Sen did MSc in Physics from University of Delhi. He also holds a Diploma in Development studies from University of Cambridge. He authored several papers in the field.

D Joshi
Senior Economist
Centre for Economic Research
CRISIL
New Delhi
Tel: 3721603, 3321073, 3320980 (Extn 107)
E-mail: djoshi@crisil.com

Mr Joshi currently associated with Centre for Economic Research, CRISIL, New Delhi as Senior Economist. Previously, he was associated with CERC (Central Electricity Regulatory Commission) as Deputy Chief (Economics) for 2 Years. He was dealing in tariff related issues, competitive bidding in electricity and regulation and competition related issues in electricity, inflation indexation of operation and maintenance charges, hedging of foreign exchange exposure etc. He was also worked with NCAER for 10 Years as Economist. At NCAER, he dealt in public finance (Central and State finances), growth sustainability issues, CGE and macro modeling, short and long range forecasting of economic variables, stabilization policy and reforms in India.

Mr Joshi was a part of the faculty conducting "Price Control Case Study" SAFIR course at Agra, October 2001. Recently, he delivered lectures on the issues in Regulation and Competition in Electricity at Center for Studies in Rural Development (CSRD) Jawaharlal Nehru University, and "Power Sector Reforms in India: Emerging Issues" at the Academic Staff College, Jawaharlal Nehru University.

He attended several training programmes both in India and overseas. He has many articles and publications to his credit. Mr Joshi did MA in Economics from Hons School in Economics, Punjab University, Chandigarh in 1987.

Leena Srivastava
Director
Division for Regulatory Studies and Governance
TERI
Darbari Seth Block, Habitat Place, Lodhi Road, New Delhi – 110 003
Fax 468 2144 or 468 2145 Country Code 91
Tel 468 2100 or 468 2111 City Code 11
E-mail : leena@teri.res.in
Web www.teriin.org

Dr Leena Srivastava assumed her current responsibilities as Director, Division for Regulatory Studies and Governance, TERI from January 1999. As a Director of the Division, her primary responsibilities include defining and implementing a research agenda to facilitate the transition to independent regulation in the infrastructure sectors of the economy; providing research direction and guidance; developing research projects and programmes; and project management. Is holding additional charge as Dean, Faculty of Policy and Planning, TERI School of Advanced Studies since June 2001. Teaching Ph.D level courses on Energy Policy and Planning and Infrastructure Economics at the TERI School of Advanced Studies. From November 1992 to January 1994, she worked as the Vice-President, Tata Energy and Resources Institute, Washington DC, USA. She was the Dean, Policy Analysis Division, TERI from April 1994 to March 1999

In her 19 years of experience in TERI, she has worked on a range of issues covering energy-economy modelling, energy pricing studies, environmental economics, climate change issues and most recently regulatory reforms. She has been involved in a number of projects advising the Government, Central as well as the State regulatory commissions and the utilities on regulatory reform, restructuring, tariff determination, integrated resource planning etc. She is the project leader for the SAFIR (South Asia Forum for Infrastructure Regulation) programme managed and implemented by TERI as administrative and professional partner of the World Bank. She also leads the Research and technical support programme on the issues of regulatory reform to the Government of India supported by the UNDP under the economic reform programme.

She holds a Masters' degree in Economics from the University of Hyderabad and Ph.D. in Energy Economics from Department of Management Studies, Indian Institute of Science, Bangalore. She has also attended the Energy Management Training Program at the Brookhaven National Lab., Upton, New York, USA.

She is a member of several national and international committees and has several publications to her credit.